

INSIDE: THE LAST TASTE OF SUMMER

Montana Outdoors

MONTANA FISH, WILDLIFE & PARKS | \$3.50

SEPTEMBER-OCTOBER 2019

What's happening to our **MOOSE?**

IN THIS ISSUE:

COOTS UNLIMITED?

LET LOOSE THE HOUNDS

CWD: ONE HUNTER'S PERSPECTIVE

A NEW MODEL FOR OUTDOOR ENGAGEMENT



Montana Outdoors

FIRST PLACE MAGAZINE:
2005, 2006, 2008, 2011, 2017, 2018
Awarded by the Association
for Conservation Information

MONTANA OUTDOORS VOLUME 50, NUMBER 5

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WILDLIFE & PARKS**
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Montana Outdoors (ISSN 0027-0016) is published bimonthly by Montana Fish, Wildlife & Parks in partnership with our subscribers. Subscription rates are \$12 for one year, \$20 for two years, and \$27 for three years. (Please add \$3 per year for Canadian subscriptions. All other foreign subscriptions, airmail only, are \$48 for one year.) Individual copies and back issues cost \$4.50 each (includes postage). Although *Montana Outdoors* is copyrighted, permission to reprint articles is available by writing our office or phoning us at (406) 495-3257. All correspondence should be addressed to: *Montana Outdoors*, Montana Fish, Wildlife & Parks, 930 West Custer Avenue, P.O. Box 200701, Helena, MT 59620-0701. Website: fwp.mt.gov/mtoutdoors. Email: montanaoutdoors@mt.gov. ©2019, Montana Fish, Wildlife & Parks. All rights reserved.

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In Canada call 1+ 406-495-3257

Postmaster: Send address changes to *Montana Outdoors*, Montana Fish, Wildlife & Parks, P.O. Box 200701, Helena, MT 59620-0701. Preferred periodicals postage paid at Helena, MT 59601, and additional mailing offices.



Montana Outdoors

SEPTEMBER–OCTOBER 2019

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By Peggy O'Neill. Photos by John Warner

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One hunter's message to the rest of Montana—and visiting hunters—on ways to think about hunting, field dressing, and consuming venison in (and from) areas where this troubling disease has finally appeared.

By Andrew McKean



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Montana's approach to slowing the spread of the deadly deer disease combines surveillance, testing, transportation restrictions, and increased harvest in key areas. *By Andrew McKean*

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DANCING WITH THE DEAD At Bannack State Park's annual late-October Ghost Walks, "Dr. Glick" dances a jig after performing an autopsy on sheriff Henry Plummer then downing a few drinks in the saloon. See page 24 to learn how the ghost town state park mixes history, heritage, and a bit of zaniness. Photo by John Warner.

FRONT COVER A bull moose browses in a western Montana forest. See page 12 to find out what FWP researchers have recently discovered about these popular mammals. Photo by John Ashley.

Are any buttes accessible?

I was surprised when reading "Ain't She a Butte?" (July-August) that author Eric Heidle actually climbed to the top of Crown Butte. While driving around Montana, I always thought that buttes were inaccessible to the general public.

Jerry Heiman
Campbellsport, WI

Eric Heidle replies: Most buttes on the plains are on private land and require permission to access. The Montana Cadastral site can be used to determine land ownership as a first step toward seeking permission: svt.mt.gov/msl/mtcadastral.

Crown Butte is publicly accessible via the south side, thanks to The Nature Conservancy. It's a good "starter" butte, due to its relative ease of climbing (although it's a pretty good haul if you're not a seasoned hiker). West Butte in the Sweet Grass Hills also is publicly accessible, but it's a strenuous climb that requires some route-finding ability. Birdtail Butte has also recently been opened to public access, but it's not one to be casually climbed.

Another option is the Montana Wilderness Association's Wilderness Walks program, which includes occasional hikes up normally inaccessible buttes. I've climbed Haystack Butte on the Front near Augusta this way, and Square Butte near Geraldine is also offered some years. The walks can be viewed here (the lineup changes each year and is first come, first served): wildmontana.org/discover-the-wild/wilderness-walks.

National Trails Day in early June is another chance to access buttes in some years. I've climbed Square Butte near Simms this way, though the landowner may have since stopped offering access to the eastern approach.

Questions

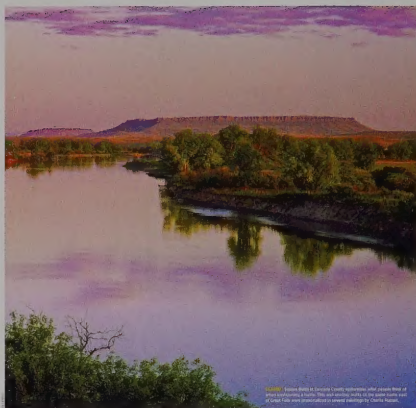
I have two questions related to May-June articles on paddlefish,

Ain't She a Butte?

By Eric Heidle

"Everything in the way of hill, rock, mountain, or cliff-top is called a butte in Montana."

By the time the sun sets, the mountains glow with a warm, golden light. The sky is a deep blue, and the mountains are silhouetted against it. The water in the lake is calm, reflecting the sky and the mountains. The scene is peaceful and beautiful.



"They Swam Beneath Dinosaurs," and dragonflies, "Pretty Little Predators": (1) Does the paddlefish have any predators? (2) Is there any way to encourage higher concentrations of dragonflies and damselflies to help combat mosquito problems?

Sonia Kragh
Syracuse, NY

Mike Backes, FWP regional fisheries manager in Miles City, responds: Young-of-the-year paddlefish are vulnerable to predation by larger walleye and sauger. Fish-eating birds—cormorants, pelicans, ospreys—have also been observed eating young paddlefish, though the magnitude of this predation is unknown. But after a year or so, paddlefish grow too large for those piscivores to handle.

Dragonfly expert Nate Kohler, of Deer Lodge, responds: Certainly the best way to create dragonfly habitat is to install a pond, preferably one with lots of emergent vegetation and an appropriate substrate. One problem, though, is that you also create breeding habitat for mosquitoes! An acquaintance of mine, living in California, has developed a nice pond habitat on her property and would likely be a better resource to answer your question. Her primary purpose in doing this was to attract dragonflies, which she enjoys observing.

She has written a book on how to build a dragonfly-friendly pond for wildlife. Visit bignest.powweb.com/southwestdragonflies/caphotos/.

Also, note that state permits are required for construction of larger ponds, especially those that contain fish.

Kind comments

I want to compliment you on your essay in the May-June issue titled "Getting stoked on conservation." It sends a clear message to all recreationists about enjoying their activities while realizing the need to protect and enhance the whole environment in which we all enjoy those activities. I mentioned your article at the State Comprehensive Outdoor Recreation Plan Committee meeting in Missoula last Monday. I also plan to share it with organizations with which I am active. Great job and keep up the good work.

Bob Walker, Helena
Chair, Montana Trails Coalition

I have been a reader of *Montana Outdoors* for several years. I have an educational background in ecology, evolutionary biology, and natural resources, and your magazine does a good job of educating the reader on the need for conservation. I am not an

advocate for hunting, but your July-August Sketchbook editorial, "Their pain, and mine," conveyed that hunters don't have to be of the old "hook-and-bullet" genre. Your well-written piece shows that to be a "good" hunter you must also have a sense of responsibility. Congratulations on making this point so well and in such a prominent forum. Also, as an avid wildlife photographer, I think your magazine showcases some of the best in wildlife photography.

Dr. George L. Ball
Tucson, AZ

I really liked your recent essay on injured animals ("Their pain, and mine"). It was well written and made great points for people to think about. I loved the Flathead Lake State Parks piece as well. Your magazine continues to do good work.

Wendy Cole
KalisPELL

Keep trying

In response to the letter in the July-August issue about thanking landowners ("Take the time to say thanks"): I would like to say to the writer that he should keep doing what he's doing. It sounds like he has found some great landowners. As for me, I've tried thanking landowners with gift certificates, dinner certificates, wine, and even a good bottle of brandy, along with a hearty handshake and thank you. That worked for a few years, but after that, the access was denied, even though the landowners complained of elk damage to their fences and crops. I'm wondering if maybe a "bad apple" hunter spoiled things for me. But I respect those landowners' wishes and now am searching for somewhere else to hunt.

Jim Herrley
Belgrade

Middle Eastern Venison Kabobs

By Tom Dickson | Preparation time: 15 minutes plus 2-6 hours | Cooking time: 6-10 minutes | Serves 4



BRINE

2 lbs. venison loin, steak, or roast, all white bits trimmed, cut into 1-inch cubes

½ c. olive oil

1 T. white vinegar

1 t. ground cumin

½ t. ground coriander

½ t. paprika

1 t. minced garlic

½ t. salt

Cherry tomatoes and pepper and onion chunks as desired

DIRECTIONS

Mix all ingredients except meat and vegetables in a ceramic or glass bowl or 1-gallon sealable bag. Add venison and cover completely with marinade. Place in refrigerator and let sit for 2 to 6 hours.

Fire up the grill. Remove meat from marinade and thread onto skewers. Oil grill to prevent sticking and grill kabobs over high heat for 6 to 8 minutes, turning every few minutes. Meanwhile, skewer onions, peppers, and tomatoes separately,* brushing with leftover marinade. Grill tomatoes for 2 minutes, turning once, and onions and peppers for 10 minutes, turning once.

Serve with warmed pita bread and tzatziki (yogurt and cucumber) sauce.

EASY TZATSIKI (TSAH-ZEE-KEE) SAUCE

1 c. plain Greek yogurt

½ c. seeded and diced cucumber

1 T. lemon juice

1 garlic clove, minced

1 T. finely chopped fresh dill or ½ t. dried

Salt and pepper to taste

DIRECTIONS

In a medium bowl or food processor, combine yogurt, cucumber, lemon juice, garlic, and dill. Stir or whiz until well combined. Taste and season with salt and pepper. Chill 1 hour before serving if possible.

*Some cooks prefer to skewer the meat and veggies together (as in the above photo), but I keep them separate to better control the different cooking times.

Kids are heading back to school. College football has started. Even some big game hunting seasons have begun. Summer's over, right?

Not for me. I like fall as much as the next person, but Montana's summer is far too short and much too sweet not to savor until the official ending date in late September.

Besides, does it even feel like summer's done? I recall a September 1 sharptail opener a few years ago north of Miles City when the afternoon high was 104 degrees. During the first month of grouse hunting, my dog and I are often high in the Big Belts, as much to flee the sauna-like conditions in town as to chase dusky (blue) grouse. September can be sweltering.

So until the calendar confirms the transition from summer to fall on the autumn equinox, I'll still be wearing shorts, swimming in lakes, and cooking dinner on the grill.

One of my favorite ways to salute the season's waning days is by grilling venison kabobs. This recipe came from experimenting with a half-dozen others found online and in Middle Eastern cookbooks. I wanted to create one that approximated the aromatic kabobs I bought years ago from street vendors in Istanbul. Though that grilled, marinated meat was lamb, I've found that prime cuts of venison work just as well. 🐾

—Tom Dickson is editor of Montana Outdoors.

The Montana Model of Outdoor Engagement

When I attend national meetings of state fish, wildlife, and parks agency directors, there's often a palpable sense of anxiety in the room. My colleagues are worried about the future of their agencies, for good reason.

Hunting and fishing license dollars, along with federal taxes on hunting and fishing gear, pay for almost all state wildlife and fisheries management and habitat restoration. But nationwide, hunter and angler numbers are declining. Hunting participation especially has decreased since the early 1980s. In 2016, only 11.5 million people hunted, less than 5 percent of the adult population. Over the next quarter-century, millions will "age out" of these activities, further accelerating the decline.

This fact may account for the slightly panicked look in my fellow directors' eyes.

When I return to Montana from those meetings, I thank my lucky stars that our situation is not nearly so dire. Yes, hunting participation as a percentage of the population has declined slightly over the past 30 years. But numbers have remained constant, and even risen in the case of fishing. Montana has one of the highest rates of hunting participation in the country. We're near the top in per capita fishing and wildlife watching, too.

Why is Montana bucking the national trend? One major reason is our public access. The Montana Stream Access Law, the Block Management Program, Habitat Montana, generous landowners, and abundant federal lands all provide countless places for people to hunt and fish.

Another reason is Montana's commitment to maintaining the integrity of fish and wildlife populations and habitat, like protecting elk winter range on wildlife management areas, working closely with ranchers and farmers on improving private land habitat, and managing wild trout in rivers for nearly half a century.

Maybe most important is the fact that outdoor life permeates Montana's culture. A major concern in other states is not just a decline in hunting and fishing, but that fewer people are connecting with the outdoors at all. That's due in large part to urbanization, aging populations, and kids spending more time staring at smartphones than sunsets.

But here in Montana, as we say in our FWP tagline, "the outside is in us all." People live in and visit this state because they want to connect with the natural world—by sitting around a campfire, hiking into wilderness, hunting elk and deer, or fishing for trout and walleye.

Across the country, other state wildlife agencies are working with

industry groups and conservation organizations to attract new hunters and anglers, hold on to existing participants, and invite back those who once participated but drifted away. This nationwide effort to recruit, retain, and reactivate is known as "R3."

FWP is part of the R3 effort, but we're moving ahead in a way that works specifically for Montana, a strategy I've been calling the Montana Model of Outdoor Engagement. I envision our model having three main features:

One, FWP would aim to grow not only the number of hunters and anglers—the bedrock of this agency—but also hikers, campers, boaters, wildlife watchers, and others engaged in nature-based activities. This reinforces the fact that outdoor recreation is the common denominator for our entire agency, and that we already provide opportunities for hiking, wildlife watching, boating, and other outdoor recreation at our state parks, fishing access sites, and wildlife management areas. As the department works on recruiting, retaining, and reactivating hunters and anglers, we'll also invite others into the FWP tent. That way we can, for instance, work with the growing number of trail users to ensure that any new trails don't damage critical habitat and unduly bother wildlife.

Two, the Montana model will focus on improving the service FWP provides to its customers, both longtime and new. A key feature will be a modern tech portal that allows FWP customers to quickly and easily access licenses, regulations, park reservations, hunting and fishing maps, and other information on their handheld or home devices. The new system will also allow us to deliver permit deadline reminders, season updates, emergency notices, and other improved services to our customers.

Finally, the Montana Model of Outdoor Engagement will be guided by the four beliefs that shape this agency: inclusion, balance, integrity, and outdoor opportunity.

Across Montana, wildlife habitat is being degraded by fragmentation. State park infrastructure is aging. Trout streams and rivers are warming. Aquatic ecosystems are threatened by invasive species. FWP can't tackle these challenges alone. That's why we need to ensure that people continue engaging in the outdoors. Only then will they value wildlife, parks, and fisheries and help us protect and conserve these resources that sustain Montana's renowned quality of life.

Other states are rightfully alarmed over societal changes that could drastically curtail their conservation funding. Fortunately, Montana is filled with people who crave the outdoors. That fact, along with FWP's long tradition of conservation innovation and leadership, gives me hope. I'm confident that our department can find new and better ways to serve and partner with the hunters, anglers, and park visitors we've traditionally served, as well as with the many others who can't imagine a Montana without clean water, healthy fish and wildlife populations, and abundant outdoor opportunities.

—Martha Williams, Director, Montana Fish, Wildlife & Parks

We need to ensure that people continue engaging in the outdoors. Only then will they value wildlife, parks, and fisheries and help us protect and conserve these resources that sustain Montana's renowned quality of life.



THOM BRIDGE

THE PRINCE OF PRINTING

DON BARTSCH

FWP Print Shop Manager, Helena

I MANAGE THE FWP PRINT SHOP, and no, I don't print *Montana Outdoors* or the hunting or fishing regulations. That's something I get asked a lot.

What I do print are FWP signs, notices, reports, maps, brochures, staff business cards, agency financial code books, pamphlets, rack cards, article reprints, and envelopes. I'm sure I've missed something in that list, but you get the idea.

I started here 17 years ago, and before that I worked at a print shop in Helena where I learned the trade. We used to have another person here, but he retired a few years ago. Now it's just me, and I've had to be creative and more efficient to make up the difference.

I operate a lot of different machinery, including a high-speed black-and-white copier, a color copier, and a high-res color printer, plus a binder, a folder, and a cutter. Sometimes I'm coordinating a dozen different projects, all in various stages of production. Things get especially crazy in midsummer when requests for signs, maps, and sign-in coupons for FWP Block Management Areas

come pouring in from the field.

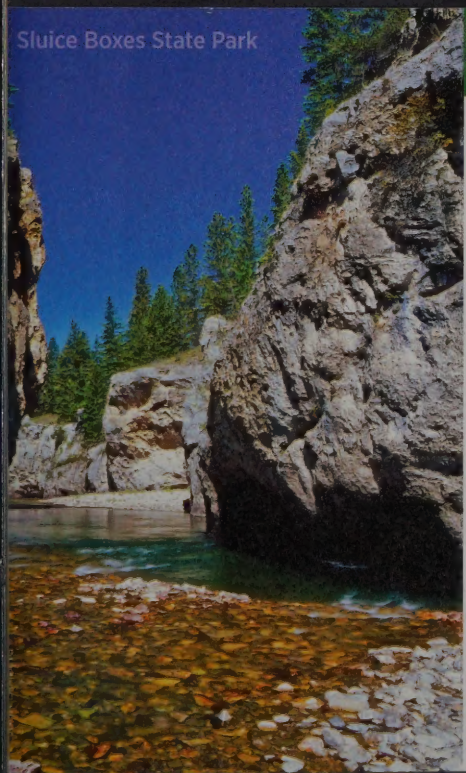
I get a lot of satisfaction from helping my FWP colleagues, whether it's a new game warden needing business cards, the director's office asking for legislative reports, or a state park requiring campsite registration tags. It's rewarding to be able to do rapid turnaround for people who need immediate print jobs, like signs for a fire closure.

I also like helping people figure out if using this shop makes the most economic sense for their project, or if they'd be better off using the state print shop, which handles larger jobs.

Then there's the creative side of the work. I like it when someone sends me a Word document and I'm able to use my design skills to figure out the best colors, typefaces, photos, and graphics to make a brochure or flier more attractive than they'd ever imagined. For example, a few weeks ago I designed and printed a bunch of kids' bird ID brochures for Brush Lake State Park. It was really rewarding this morning when they e-mailed to say how tickled they were with the result. 🐾



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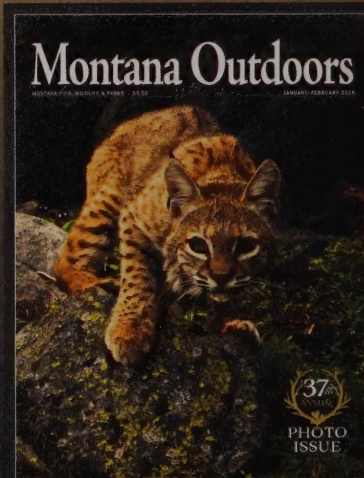
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Late one afternoon last October, **Roland Taylor** left work early and headed to a site at nearby Benton Lake National Wildlife Refuge that he knew provided a great photographic vista. "I stood there for maybe half an hour taking hundreds of photos of that sunset scene, both with geese and without," says Taylor, a Great Falls graphic artist and photographer. "Later, when I was looking through the images on my camera, I knew that this particular one was *the* shot. The combination of low light; the soft blues, golds, and whites of the sky, water, bulrushes, and clouds; and then the position of those two geese all come together to make the photo look almost like an oil painting." ■





Driving before dawn to a "secret spot" in western Montana last October, photographer **Don Jones** of Troy rounded a bend and saw this brilliant sunrise behind a herd of cow elk and a lone herd bull. "I pulled over and started shooting like crazy, using three different lenses, because that spectacular predawn color only lasts for a few minutes," he says. "I'd seen sunrises like that before, but never with such great subject matter in the foreground, so I knew I was especially fortunate that morning." ■

OUTDOORS REPORT



8 Number of acres, in millions, of public hunting access made available through Montana's Block Management, Upland Game Bird Enhancement, Open Fields, Habitat Montana, and Unlocking State Lands Programs.

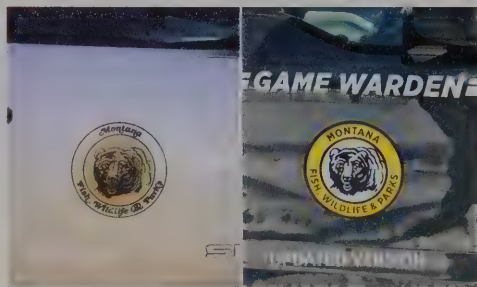


Updated FWP logo appearing around the state

FWP has updated its 40-year-old logo as part of an initiative to modernize the department's image. Created in the 1970s, the previous logo was a grizzly bear head above text in a dated typeface. The revised logo encircles an improved grizzly head with the agency name in a modern font.

"The idea was to retain the tradition of the old logo while making a more-visible revision that better reflected a modern, forward-thinking agency," says Greg Lemon, head of the FWP Communication and Education Division.

The revised logo appears on FWP hunting and fishing regulations booklets, brochures, and other publications. It's also being used on new pickups and other vehicles, on new agency uniforms, and at agency offices, wildlife management areas, state parks, and fishing access sites when old signs need to be replaced.



Feral pigs breed at an early age, produce litters of up to 12 young, and wreak havoc on farmlands and native ecosystems.

INVASIVE SPECIES

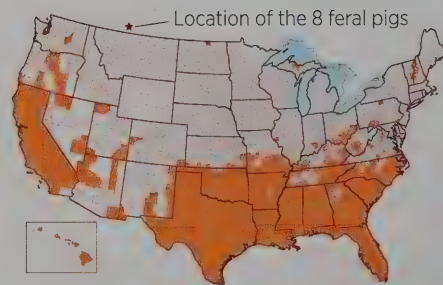
Feral pigs knocking on Montana's door

As if zebra mussels and chronic wasting disease weren't bad enough, now feral pigs are on the verge of entering Montana. In mid-July, Alberta's Ministry of Forestry and Agriculture reported a group of eight adult hogs rooting around a farmer's field just 16 miles from the border northeast of the Sweet Grass Hills.

Montana officials say it's only a matter of time before feral pigs cross into the state.

Feral pigs are descendants of European wild boars brought to North America and released into the wild or kept in game farms. The destructive hogs have since spread to at least 38 states and several Canadian provinces. Weighing an average of 180 pounds, wild pigs adapt to a wide range of climates and breed prolifically. Females begin breeding at age seven months and produce litters of up to 12 young. Wild pigs can survive Canada winters and Texas summers.

Also known as wild pigs and wild swine, feral pigs are considered an invasive species. In addition to eating and damaging crops, they spread disease such as pseudo-rabies to livestock and wildlife, harm native plant communities by rooting in soil, and prey on



Feral swine distribution by county (2018)
SOURCE: USDA

nesting birds, small mammals, and deer fawns. The U.S. Department of Agriculture estimates wild pigs cause at least \$1.5 billion in damage to crops and livestock each year.

Responding to the risk that the aggressive animals pose to Montana agriculture, wildlife, and ecosystems, the Montana Legislature has "prohibited the transportation, possession, and hunting of feral swine."

Montana is also developing a response plan that will, among other things, encourage people to report wild pig sightings so that officials can quickly dispatch the animals before they spread farther. ■

WILDLIFE

Two more grizzlies delivered to the Cabinet-Yaak

FWP and the U.S. Fish & Wildlife Service recently moved two grizzly bears from the Whitefish Range into the Cabinet-Yaak Ecosystem in northwestern Montana.

In collaboration with the federal agency, FWP biologists captured a sub-adult female and sub-adult male in mid-July and released them near Spar Lake on the Kootenai National Forest near Troy.

The relocations were part of a long-standing program to help recover the area's struggling grizzly population and improve its genetic diversity. In 1988, biologists estimated that fewer than 15 grizzly bears remained in the Cabinet-Yaak. The Cabinet-Yaak Augmentation Program began two years later to bolster reproduction by adding female bears, and to diversify the population's genetics by adding grizzlies from other populations. Twenty-two bears have been moved to the Cabinet Mountains since the program began.

Biologists estimate that 55 to 60 grizzly bears now live in the ecosystem, with the population growing only at about 1 to 2 percent per year.



While grizzly numbers elsewhere in Montana are growing rapidly, the Cabinet-Yaak population has struggled. Two new bears relocated from the Whitefish Range will help with recovery.



Hunting regulations booklets work better

Hunters and trappers will notice new and improved hunting and trapping regulations booklets this fall.

An FWP working group of communication specialists, game wardens, lawyers, and biologists worked for a year to make the booklets more readable and easier to understand.

According to group member Bob Gibson, FWP regional Information and Education Program manager in Billings, the team removed redundant language, beefed up the index and table of contents, and grouped items such as hunter orange requirements and youth hunting opportunities. "Let's say you want to take your kid hunting," Gibson says. "Before, all the youth hunting opportunities were scattered throughout the booklet. Now they're all on one page."

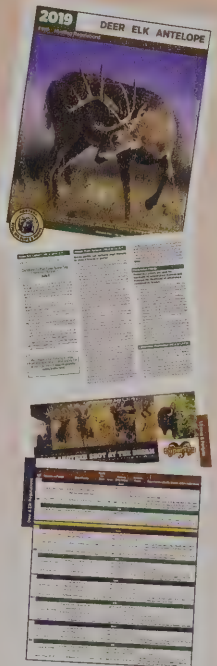
Other improvements include:

- ▶ putting lengthy hunting district boundary descriptions in a separate booklet;
- ▶ making wording consistent throughout the booklets;
- ▶ grouping all licenses and permits valid in multiple hunting districts in one section; and
- ▶ showing more information in table format to make it easier to read and understand.

Gibson notes that there has been no change in the actual regulations, only in how they are displayed and organized.

"But during the next year, a team of FWP biologists will examine the regulations to see which ones are too complex or no longer make sense," he says. "And we're making sure that hunters have plenty of opportunities to help us decide how rules, hunting districts, and seasons should evolve. This will be a much longer process than the one we just went through."

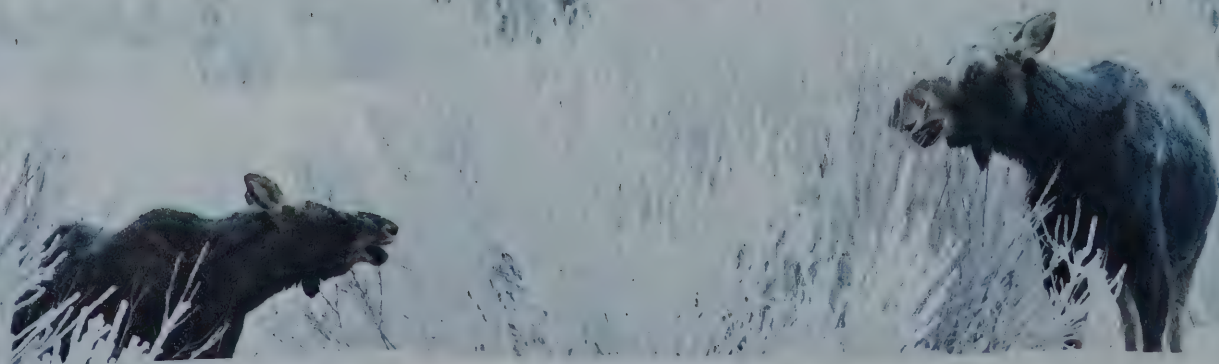
Both processes, Gibson adds, "are aimed at making life easier for law-abiding hunters who just want to know what they can and can't do in Montana during the hunting seasons." ■





SOLVING MONTANA'S

FWP researchers search for answers to help conserve these popular big game and more predators. **BY TOM DICKSON**



DONALD M. JONES



MOOSE MYSTERIES

the animals in the face of rising temperatures, shrinking habitat,



In winter, the Big Hole valley looks like a vast white lake lapping against the Pioneer Mountains to the east and the Beaverhead Mountains to the west. The 15-mile-wide expanse of snow sits atop a mix of sagebrush prairie, pasture, hayfields, and willow swamp. Within this broad valley and surrounding forests resides one of the state's largest moose populations.

On a frigid February morning, the temperature hovering around -20 F., Montana Fish, Wildlife & Parks wildlife research biologist Nick DeCesare and I are driving across the valley near Wisdom searching for a radio-collared cow moose. Two miles out of town, after picking up a strong signal with his radio receiver, he parks his pickup along a frozen county road. We get out and wade through the knee-deep snow in pursuit.

"There," DeCesare says a few minutes later, pointing to two distant dark shapes. A cow moose sporting a bright white collar and her nine-month-old calf pause against a stand of willows. Then they amble off, long legs carrying them easily through the deep drifts. Trudging after the pair, DeCesare gathers a handful of the cow's fresh thumb-sized droppings to be tested for progesterone, indicating pregnancy.

DeCesare, who earned his doctorate in wildlife biology at the University of Montana, makes his way back to his truck. He mentions that he's been following this particular moose for six years, watching her raise calves to young adulthood as part of a study he's doing with other research scientists. "It's great getting all this broad population-wide data that will eventually be used to manage moose," he says. "But it's also pretty neat that we get to intimately know these individual moose year after year. They're such cool animals."

WELL-LOVED

Few would disagree. Nearly as large as a horse, graceful and stately in movement,

and possessing a noble snout, moose are one of western Montana's most popular wildlife species. Tourist shops sell sweat-shirts, mugs, and postcards adorned with images of this largest member of the deer family. "Landowners, hunters, residents, nonresidents—you name it—I've found that almost everyone loves moose," says Jesse Newby, an FWP wildlife research technician working with DeCesare.

Despite the popularity of *Alces alces*, Montana wildlife managers lack information about the species' diet, movements, pregnancy rates, and other basic "vital rates." FWP has lacked funds to study a species that generates relatively little hunting license revenue. Only about 300 moose are harvested in Mon-

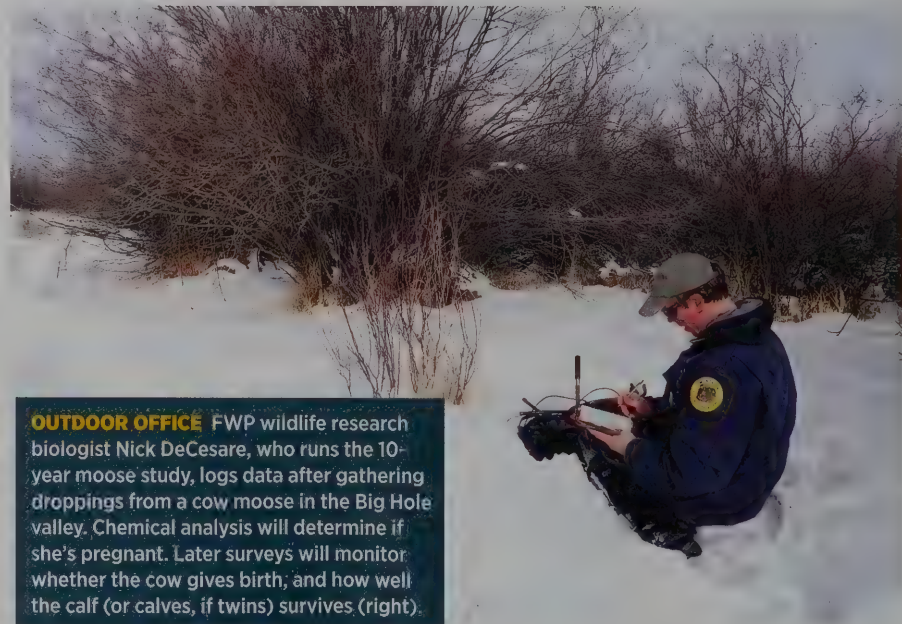
tana each year, compared to 25,000 elk and 95,000 mule deer and white-tailed deer.

Moose managers have long been frustrated by the scant information, especially regarding population sizes and trends, which help them determine hunting harvest quotas. "It's a major dilemma," says Ryan Rauscher, FWP wildlife biologist in Conrad, whose work area includes moose range along the Rocky Mountain Front. "If a moose population is trending down and we overharvest by issuing too many licenses, we could set recovery back for years."

At the same time, if managers don't know that a population is growing and could sustain additional harvest, they must be cautious and issue fewer licenses than if they had more accurate data. "That means denying some hunters a hunt of a lifetime," says Rauscher.

The need for information grew in the mid-1990s, as hunters and others started reporting fewer moose in parts of western Montana. Hunter success rates began declining too, as did annual harvest. The hot, dry years of the early 2000s raised concerns further. Moose require cool, wet climates and can overheat in summer temperatures above 60 degrees. The large mammals, which need Alaskan weather, were enduring Arizona-like conditions.

British Columbia, Maine, Vermont, Wyoming, and other provinces and states



OUTDOOR OFFICE FWP wildlife research biologist Nick DeCesare, who runs the 10-year moose study, logs data after gathering droppings from a cow moose in the Big Hole valley. Chemical analysis will determine if she's pregnant. Later surveys will monitor whether the cow gives birth, and how well the calf (or calves, if twins) survives (right).



also were reporting moose declines (though in some parts of North America, including northeastern Montana, numbers were increasing). A population in Minnesota, one of the largest in the lower 48 states, crashed from roughly 4,000 in the mid-1980s to almost zero in the mid-2000s. “We started to wonder: Is there a continent-wide trend that Montana is a part of?” says Justin Gude, head of FWP’s wildlife research program.

Meanwhile, wolf and other large carnivore numbers were increasing. And logging, which opens forests to sunlight that generates more willows and other shrubs that moose prefer, had declined for decades. Were these factors driving moose numbers down? What about parasites—winter ticks, brain worms, arterial worms, and liver flukes—to which moose are particularly vulnerable? “With so many possible factors, it was impossible to figure out the right course of action for managing moose,” says Gude. “We needed answers.”

10 YEARS, 3 AREAS

Since 2013, FWP research scientists have worked to answer these and other moose management questions with an unprecedented 10-year study. Its two primary goals are (1) understand the relative importance of adult cow survival, cow pregnancy, calf survival, and other factors driving moose populations up or down; and (2) find a cost-effective way to monitor moose numbers in the future.

The study focuses on moose in three widely different areas: the upper Big Hole valley and surrounding mountains, the east Cabinet and Salish Mountains near Libby, and the Rocky Mountain Front in western Teton County.

During the first six years of the project, 162 moose have been captured with nets or tranquilizer darts. Scientists check each animal’s fat content, age (by examining teeth), other vitals, and tick numbers before fitting it with a large white collar carrying a radio transmitter, which emits a unique frequency. In winter, they determine pregnancy rates by analyzing fecal pellets. In spring, they fly in planes or helicopters to see if pregnant cows have given birth and,

if so, whether to single calves or twins. The researchers check a few months later to monitor calf survival, then fly again the following March to see if the young are still alive and thus have been “recruited” into the population. “The first year is critical,” Newby says. “That’s when calves are most vulnerable to predators, disease, and malnutrition. If they make it through their first

tion ecology study on its own. Partners include Safari Club International, The Nature Conservancy, and dozens of local landowners, as well as other wildlife agencies in the United States and Canada studying moose and sharing results. Successful moose hunters also assist by sending in blood samples and measuring rump fat to provide additional data.

MAJOR FINDINGS

Now on year seven of the study, researchers have already learned much about Montana’s moose. Perhaps most significant is that none of the three studied populations appears in dire straits. “We didn’t know what we’d find, so that’s definitely good news,” DeCesare says.

The main discovery in the Big Hole is that many adult moose are being killed by three-inch-long parasites transmitted from horseflies. These arterial worms congregate in the arteries at the base of the animal’s head and apparently restrict blood flow to the brain.

Researchers found Big Hole pregnancy rates and calf survival comparable to the other areas, but that hasn’t fully offset the decline in adult cow numbers. The result has been a slight annual population decline of 3 percent over the past six years. “The two drivers of moose populations are adult female mortality and calf survival,” Newby explains. “And of the two, cow mortality is the biggest factor. That’s why the Big Hole population is struggling a bit.”

Researchers’ most important finding in the Cabinet-Salish study area is the population’s poor moose calf survival—the lowest of the three areas. “It’s what you’d expect from a region with lots of large carnivores,” DeCesare says. Researchers set up trail cameras confirming that the study area is flush with mountain lions, black bears, and wolves.

Fortunately, the Cabinet-Salish has high adult cow survival, which more than offsets the calf loss to predators and has accounted for a modest annual population growth of 3 percent.

The story along the Front is a strong 11 percent annual population increase. The main driver, Newby says, is the relatively high number of calves that cows churn out each year. Though pregnancy rates in all three study areas are similar, moose on the Front are fatter, become pregnant at an earlier age,



MOOSE MONITORING Nick DeCesare with a cow moose tranquilized from a dart fired from a helicopter. After drawing blood samples and taking body measurements, he attaches a collar fitted with a radio transmitter. Transmitters on 162 moose tracked in the three study areas (below) allow scientists to locate individual animals and see which habitats they use and how well they survive from year to year.

Moose Population Ecology Study Areas



winter, they stand a good chance of living a long time.”

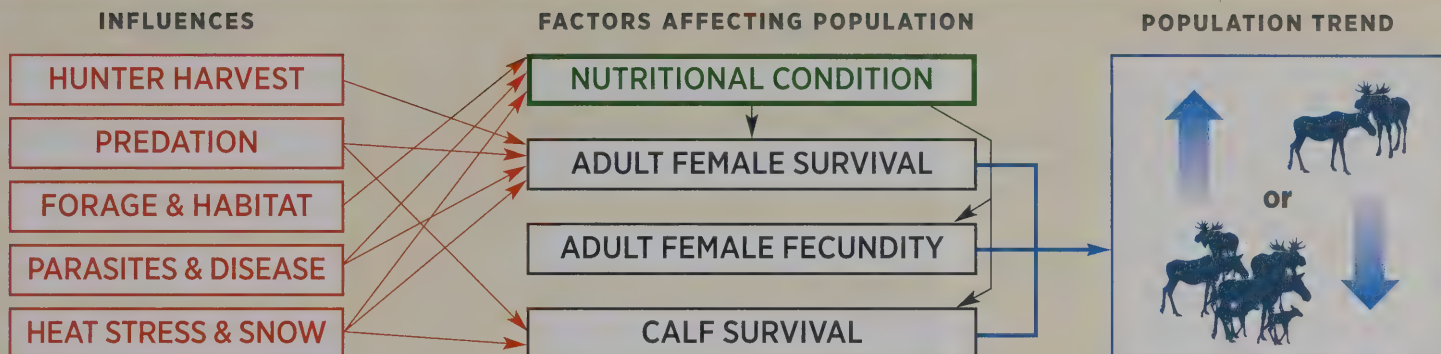
Researchers also analyze fecal pellets to learn which plants adult moose eat. By using ultrasound equipment to measure body fat in captured cows and monitoring the percentage that give birth to twins, they can determine the nutritional quality of habitat. They also monitor adult moose survival to learn why the animals die.

FWP isn’t pulling off the moose popula-

Tom Dickson is editor of Montana Outdoors.

VARIABLES

FACTORS AFFECTING MOOSE POPULATIONS



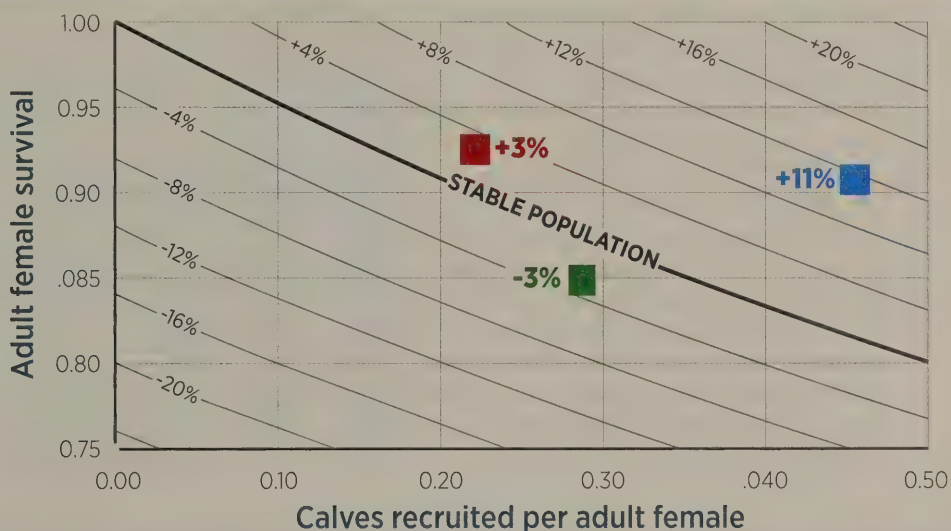
The main factors that determine whether a moose population increases or decreases: survival of adult females (which produce young and thus drive a population), cow moose pregnancy rates (fecundity), and calf survival. Driving fecundity and calf survival is the animals' health (nutritional condition), which is influenced by habitat, disease, and stress; other influences are hunter harvest and predation. FWP researchers are monitoring and measuring all these influences and factors.

Population growth rates: 2013-2018

This chart shows the two main factors affecting moose populations: cow survival rates and rates of calf recruitment (survival to age one). The dark line in the middle indicates a stable population. Populations above the line are growing, and the one below the line is shrinking slightly. Note that even though calf survival in the Cabinet-Salish is relatively low, the population is still increasing at 3% per year due to the high cow survival. On the Front, both rates are high, leading to an 11% annual population growth.



- Cabinet-Salish
- Big Hole Valley
- Rocky Mountain Front



Causes of female moose mortality: 2013-2018*

Despite widespread speculation that adult moose are being killed by wolves and other carnivores, the study shows that the main culprits are health related. FWP researchers had suspected winter ticks, which have devastated populations in northeastern states. But it turns out that the major cause of mortality, especially in the Big Hole study area, is arterial worms, which congregate in a moose's neck and restrict blood flow to the brain.



What kills* adult cow moose?



produce more twins, and see higher calf survival. "It all seems to be related to nutrition, that the habitat is super conducive to moose growth," says Newby.

HOW TO COUNT MOOSE

When they aren't outside tracking moose, DeCesare and Newby sit at computers trying to find a better way to monitor moose populations statewide.

For decades, FWP moose managers flew aerial surveys in some hunting districts, but they wondered about accuracy. Like wolves, moose are difficult to spot in the dense forests where they often live. Unlike deer and elk, which congregate in visible herds, moose are mostly solitary, making them especially tough to spot, even from the air. Unstable and rapidly changing weather in moose range also meant surveys were inconsistent during widely varying times of the year, rendering results only somewhat useful.

In most moose areas, FWP relied on hunter harvest data, which, when not backed up by other survey methods, can be even less helpful in monitoring population trends. "Let's say you had a hunter success rate of 90 percent one year and 60 percent the next," says Vanna Boccadori, an FWP wildlife biologist in Butte whose work area covers the Big Hole. "Did that reflect a decrease in the moose population, or did it just mean that hunting conditions were particularly bad that second year?"

Looking back, the moose researchers compared the aerial survey results to hunter harvest data. For instance, did hunter harvest increase in years when biologists spotted more moose from the air the previous winter? That would indicate a strong correlation and show that the two monitoring methods might be valid ways to count moose. Too often, however, the two didn't line up. "The lack of a strong correlation means we don't know which one to trust, so based on our previous concerns, we don't trust either one," says Gude, the research bureau chief. That's



EYEBALL BREAK Wildlife technician Jesse Newby takes a breather after a morning of tracking moose along the Front in late June.

valuable knowledge in more ways than one. FWP is already saving money by no longer conducting expensive helicopter flights in many areas.

But with harvest data and aerial surveys no longer viable options, how could wildlife managers monitor moose populations? The researchers had an idea: What about asking hunters if they saw moose during the fall? Not just the 350 or so moose hunters, but also the 160,000 deer and elk hunters who put in a combined 2 million days afield each year. "That's a lot of eyeballs," says DeCesare. "If the sightings start corroborating each other, you can have a high confidence level of moose distribution and population trend."

Each winter for several years, FWP phone surveyors have asked hunters if, where, and when they saw moose. Scientists are now using statistical analysis and computer modeling to translate the information into moose populations and population trends. "Because it's so cost-effective, we hope this is the answer," says Gude. "But we still need to finish the modeling and vet it with local wildlife managers to see if they find the information valuable for setting moose seasons."

ANSWERS DOWN THE ROAD

Over the next few years, researchers will keep monitoring the collared moose and their young. They'll also continue studying the genetics of Montana's Shiras moose to

Other moose study findings

AFTER STUDYING COW AND CALF MOOSE in three areas for more than 6 years of a 10-year study, here's some of what researchers have learned:

► **Moose age and size:** Cows ranged from 1 to 16 years old, averaging 6 years, weighed 650 to 800 pounds, and ranged from 8 to 9 feet long.

► **Movement:** Most moose stayed within areas of 10 square miles or less, but some ranged widely. One cow from the Front traveled as far east as Havre. Another roamed well into Alberta, Canada. "Young males are known to range, but we were surprised to see several females making such long journeys," says FWP research technician Jesse Newby.



During one winter in the Cabinet-Salish study area, two cows crossed the Cabinet Mountain Continental Divide. "Those two are great examples of how we're seeing many moose living at much higher elevations than we'd thought, and how they are traveling through snow to get there," says Tonya Chilton-Radandt, FWP wildlife biologist in Libby.

► **Adult mortality:** Of the 57 collared cow moose that have died so far, 34 perished from arterial worms and other health-related causes, 11 from predators (wolves, grizzly bears, mountain lions), 4 from humans (poaching, vehicle accident, hunting), 1 from a natural accident, and 7 from unknown causes. "People assume that large carnivores kill a lot of adult moose, but we



HOW RESEARCH PAYS OFF Biologists hope the 10-year moose population ecology study will provide information to help them offer as many hunt-of-a-lifetime opportunities as possible while ensuring that populations are not overharvested and remain healthy.

see if it is indeed a distinct subspecies, as biologists have long believed. Hunters in particular want to know, because it affects how record-keeping organizations like the Boone & Crockett Club score moose antlers.

This past summer, researchers and biologists have been meeting to decide which other aspects of moose population ecology the study should consider. "Should we focus on learning more about what's killing calves in northwestern Montana?" asks DeCesare. "Should we spend more time studying how arterial worms are transmitted via horseflies to Big Hole moose—whether from mule deer, elk, or some other host? Should we put our resources into understanding nutritional and habitat

differences separating the Front moose from those in the other study areas?"

Rauscher, the Conrad-area biologist, hopes the researchers can help him and other managers track cow and calf survival rates after the study ends. "This study is too expensive and intensive to continue perpetually," he says. "Is there some other way we can gather the data we need to manage moose in the future?"

"THERE SHE IS"

Like DeCesare, Newby wants to supply wildlife managers with key information they can use for decades down the road. On this late June morning, however, he's simply hoping to locate one elusive cow moose.

You'd think a large, dark animal that weighs 750 pounds and stands five feet at the shoulder would be easy to see, especially from a helicopter. But along Dupuyer Creek, a shrub-shrouded stream that spills out between towering granite reefs along the Rocky Mountain Front, Newby and FWP pilot Rob Cherot struggle to spot a moose they know is directly below.

For years Newby has been tracking this and other cows, watching them grow fat and fertile in the lush shrub forest habitat. Today he's checking to see how well their calves are faring. Though aerial surveys aren't effective for determining moose population estimates, a helicopter is still the best way to locate individual radio-collared animals.

As the radio receiver beeps louder, indicating the moose is even closer, Cherot banks the chopper and makes another pass over a dense aspen stand. Nothing. Then, as he circles once again, a large near-black animal emerges from the pale green foliage followed by two smaller red-brown shapes. "There she is, with her twins," Newby says.

It's an encouraging sign during what has been a puzzling summer. After years of high calf survival along the Front, fewer young moose have been surviving in 2019. "We don't really know what's changed," Newby says.

Along with everything else about this beloved species that he and other researchers are working to better understand, he'll have three more years to find out. 🐻

found that 60 percent of mortality is from disease and parasites, especially in the Big Hole," says FWP research biologist Nick DeCesare. "Predators account for less than 20 percent."

► **Nutrition:** In the Cabinet-Salish study area, moose mainly ate shrubs, with some conifers in the winter. In the Big Hole, their winter diet consisted of roughly half shrubs and half grass and sedges (from haystacks), and shrubs entirely in the summer. On the Front, moose ate only shrubs in the winter and mostly shrubs in the summer.

► **Pregnancy:** All three populations had roughly the same pregnancy rates. The more rump fat that cows had—a reflection of nutrition—the more likely they were to get pregnant.

► **Recruitment:** By far, the highest "recruitment"—the rate of calves that are born and survive one year—was on the Front, likely due to more nutritional habitat and less predation. Next was the Big Hole population, and in last place were the Cabinet-Salish calves, likely because of high carnivore numbers in the area.

► **Parasites:** In addition to the arterial worms found mainly in Big Hole moose, researchers looked at winter ticks. Winter ticks are common on moose and, in small numbers, cause no problems. But heavy infestations of 50,000 or more on one animal result in considerable blood loss. During winter, the loss leads to depleted fat and eventually muscle reserves. In other northeastern states, winter ticks are responsible for major moose population declines.

On moose in the three Montana study areas, researchers found winter tick numbers ranging from just a few hundred to 8,000 per animal. The highest tick loads were along the Front. Yet that's also where moose had the highest pregnancy rates, the highest rates of twins, and the greatest population increase. "So it doesn't look like ticks are limiting Montana moose fecundity or survival," says DeCesare.

Researchers also found that brainworms (carried by white-tailed deer) are not killing Montana moose as they are in states to the east, especially Minnesota. ■

Quick Release

The odds of your dog ever becoming caught in a trap or snare are slim. Even so, you might want to know where the devices are typically placed, how they work, and, in the unlikely event your dog gets caught, how to set it free.

By Tom Dickson

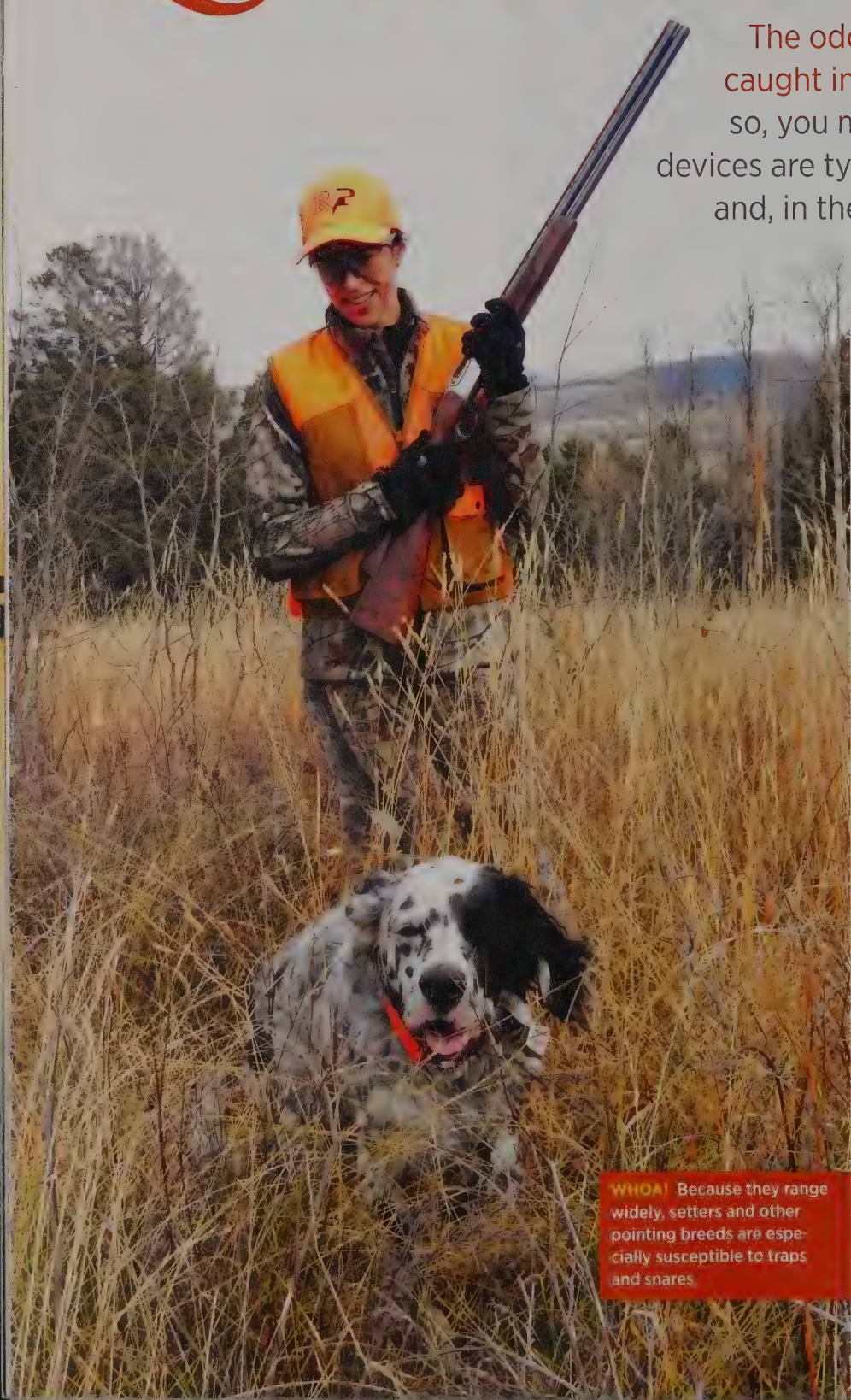
In 2006, Wayne Hadley of Deer Lodge was hunting pheasants with his wife Kathleen on private land in central Montana with their Labrador retriever, Annie. Toward the end of the day, as he walked along a sheep (woven wire) fence, Hadley noticed two coyote skulls on the ground. "That should have gotten my attention, but I was tired and was looking forward to getting back to the truck," says the retired Montana Fish, Wildlife & Parks fisheries biologist.

When the dog ducked under a low spot in the fence about 15 feet away, she stopped and began pulling at what Hadley quickly saw was a coyote snare set in the gap. "It had closed just behind her head, and she was already having trouble breathing," Hadley says. "I grabbed her and held her close to the fence to prevent the snare from pulling even tighter."

Hadley yelled for Kathleen to hold the dog while he tried to find the locking mechanism. "I fumbled a bit but eventually figured out how to release it and back the snare off Annie's neck," he says.

The dog was unharmed and within minutes was happily back searching for pheasants. But Hadley was shaken—and remains so. "The memory still gives me the willies," he says.

Though frightening, Hadley's incident with his dog and the trap was uncommon. "I've run Labs in the West for over 40 years and never encountered this problem before," he says. But it's a situation that worries many



WHOAI Because they range widely, setters and other pointing breeds are especially susceptible to traps and snares

upland bird hunters, hikers, and cross-country skiers who roam the outdoors with their four-footed partners. Fortunately, few of the estimated 200,000-plus dogs in Montana get caught in traps or snares each year.

State law requires trappers to report all dog captures to FWP. Excluding dogs allowed to run “at large” (unrestrained and unsupervised), department officials say that roughly 13 dogs are caught in traps each year, or one dog per 250,000 “trap-nights” (a 24-hour period when a trap is set anywhere in the state by Montana’s roughly 5,000 licensed trappers). In those instances, the owners or trappers release the dogs without any injury 72 percent of the time. Injuries are usually limited to swelling or relatively minor cuts.

“In the extremely rare case where a dog is killed in a trap or snare, it’s almost always in an illegal set or is a dog that has been allowed to roam at-large on someone else’s private property,” says Bob Inman, FWP Furbearer Program coordinator.

Yet for dog owners, even the slight possibility that their pet would venture near a trap or snare can be worrisome. Many people who hike, cross-country ski, and hunt with a canine companion find peace of mind in knowing where the devices are most likely to be found and how to release their pet if it were caught.

SNARES

Upland bird hunting dogs would most likely encounter a *wire snare*. These multistrand cable loops are mainly used to kill coyotes preying on livestock. They are set about 18 inches off the ground so that when the predator moves along a path, the loop catches and tightens around the neck, quickly suffocating the animal (see photo on page 23).

Snares are found mainly on private land, especially around sheep operations, but they also are set in other places.

If your dog is caught in a snare, you need to remove it quickly. A dog can suffocate within minutes, and the more it struggles, the more the snare tightens around its neck. But you also need to remain calm because your dog will sense your alarm and may struggle more.

The snare has a small, metal locking mechanism that prevents the cable from loosening. To release the mechanism, you

need to actually tighten the snare a bit to release tension. Visit a store that sells trapping supplies (Sportsman’s Warehouse, for example) and ask if you can look at snares to see how the locking mechanisms work.

Another way to free your dog is to cut the cable at the neck. Use a special trapper’s cable cutter or heavy-duty, eight-inch diagonal side-cutting pliers carried in your hunting vest or day pack. Wire cutters or Leatherman-type multitools rarely can cut a multistrand snare cable. To ensure your cutter will work, buy a few feet of $\frac{3}{8}$ -inch cable at a hardware store and try it.

FOOTHOLD TRAPS

Dogs with hikers or cross-country skiers would most likely encounter *foothold traps*. These nonlethal metal traps are used to catch and hold bobcats, raccoons, foxes, coyotes, and wolves by the foot until the trapper returns to make a quick kill. They are placed on the ground where furbearers travel, typically baited with an attractive scent, and covered with a thin layer of soil or leaves. Many foothold traps have rubber-coated or offset jaws designed to hold but not damage the animal’s limb.

To release your dog, put a jacket over its



NONLETHAL Modern foothold traps have rubber-coated jaws or ones that don't close entirely (top), reducing permanent injury to dogs. Above: Even older versions usually result in only minor paw injuries.

head to calm it, ideally with its muzzle in the sleeve. Dogs caught in traps can become frantic and may bite their owner.

Press down with a foot or the palm of your hand on each spring to open the jaws. Usually you don't have to compress the springs much to loosen the trap enough for the dog to slip free.

BODY-GRIPPING TRAPS

The third and least commonly encountered device is the body-gripping trap (also known as the Conibear, for its original designer). Powered by two large springs, a body-gripping trap works like a giant mousetrap—but without the wooden platform—by snapping around the animal's neck or body. These traps are mainly used for taking beavers in or near water.

On federal lands such as national forests, and on state trust lands and state forests, state law requires that large body-gripping traps be set inside a box with no larger than a seven-inch by seven-inch opening so that curious dogs can't enter and trip it.

These traps come in many sizes. The smaller ones are easy to open (with instruction), but the larger versions are extremely difficult to open to release a dog, especially on snow or other soft ground where leverage is difficult. Learn how to open large body-gripping traps by watching YouTube videos and practicing (with supervision—these traps are dangerous to handle). Waterfowl hunters and others with dogs who regularly encounter water in the fall and winter may wish to learn the process.

AVOIDING TRAPS

The closer your dog is to you, the less likely it will encounter a trap or snare and, if caught, the quicker you can free it. Most dogs caught in traps or snares are either allowed to roam unsupervised off-leash or are wide-ranging bird hunting dogs often out of sight of their owners. If you have concerns about traps or snares where you hunt, hike, or cross-country ski, keep your dog on a leash or at least within sight. Cross-country skiers: Many pet shops sell special “bungy-style” leashes that keep your dog from pulling you over.

As for the danger of traps to people, FWP has no record of an adult or child getting caught in a trap or snare. These devices are set

specifically to catch certain types of animals, in places where people rarely venture.

On public land, trappers typically avoid setting traps anywhere near trails. "Due to the high foot traffic and the number of dogs, furbearers are driven far away from popular trails," says Jim Buell, president of the Montana Trappers Association. Buell adds that trappers are well aware of their public image and the growing threat to trapping that comes from changing attitudes in increasingly urbanized areas. "Trappers have absolutely no interest in having dogs or other nontarget animals end up in their traps," he says.

Traps and snares on public land are most often set in winter, when furbearer pelts are thickest and most valuable. Trapping seasons for regulated species generally run from November 1 through the end of February. When there's snow on the ground, avoid any single set of human tracks or sled marks heading off-trail, which could indicate someone running a trapline.

If exploring private land, ask the landowner about any traps on the property and specific locations to avoid. Be especially alert in places with domestic sheep or sheep fencing; these areas often contain snares used to protect livestock from predators.

SETBACKS AND OTHER LAWS

Many laws regulate trapping locations in Montana. Traps or snares can't be set in a national park or most national wildlife refuges. They are prohibited within 1,000 feet of any designated public campground or

Tom Dickson is editor of Montana Outdoors.



SAFER SKIING By keeping their dogs nearby, cross-country skiers and hikers can greatly reduce the already slim odds of a trap or snare encounter.

recreational site such as a boat ramp or fishing access site. Traps or snares aren't allowed within 50 feet of the edge of trails or roads designated by administrative signs or numbers, such as those in national forests (for instance, "FT 113"). Depending on the type of trap, they are prohibited within 300 to 1,000 feet of a designated trailhead. And it's illegal for a trap or snare to be within 500 feet from the edge of trails and roads in more than two dozen high-use hiking and cross-country ski areas in northwestern and southwestern Montana (for details, see pages 6-7 of the 2019 Montana Trapping Regulations, available at FWP offices, online, or at sporting goods stores).

Trappers are not legally required to post orange flags or other warnings at their trap sites. That's primarily to prevent people from vandalizing the sets. The one exception is that state school trust lands containing traps must have signs indicating their presence. Also, it's illegal to destroy, disturb, or remove any trap or snare you might

encounter (unless it's to free your dog).

Trapping is legal under site-specific regulations on most state wildlife management areas (WMAs) as well as on Block Management Areas (BMAs) where the private landowner has clearly given permission for trapping. Many upland bird and waterfowl hunters wonder why this is allowed, since it increases the risk of hunting dogs encountering traps. "The short answer is that licensed trapping is a legal activity, and WMAs are purchased in part for both public hunting and trapping," Inman says.

As for BMAs, Inman notes that landowners do not forfeit any property rights by enrolling land in the program. If they want to allow legal trapping, they may. Because FWP does not require that BMA enrollees post signs or otherwise indicate that their land may contain traps, hunters should always assume that any BMA could contain traps and take precautions.

Hadley says he still thinks about the day his dog Annie almost suffocated from a snare. But he also recognizes that, as tragic as the incident might have been, it was a rarity. "I've read a lot and talked to many other hunters about traps since that happened," he says. "The advice I now give is to keep your dog close, stay away from areas mostly likely to contain traps or snares, and carry a snare cutter that you know will cut cable." 🐾

FWP, Alaska Fish and Game, Idaho Fish and Game, and several trapping groups provide online instructions and videos on how to release a dog from various traps and snares. The FWP video is at fwp.mt.gov/hunting/trapping.



A trapper in 1908

Trapping culture

People have been trapping in Montana for centuries. Native Americans trapped animals for their fur and to trade with early explorers. Later, European trappers trapped and sold beavers and other animals for commerce. Trapping continues today as a biologically sustainable form of outdoor recreation as well as a management tool for removing nuisance animals such as beavers, which sometimes build dams that cause roads, crop fields, and other areas to flood.

Roughly 5,000 people are licensed to trap in Montana. FWP requires trappers to buy an annual license and follow regulations regarding seasons, limits, and trap use and placement. Wolf trappers must also be certified by taking a state-facilitated class. The department encourages all trappers to participate in voluntary trapper education programs that, among other things, provide advice on how to avoid accidentally capturing dogs or other "nontarget" animals.

Snare & Traps 101

SNARE

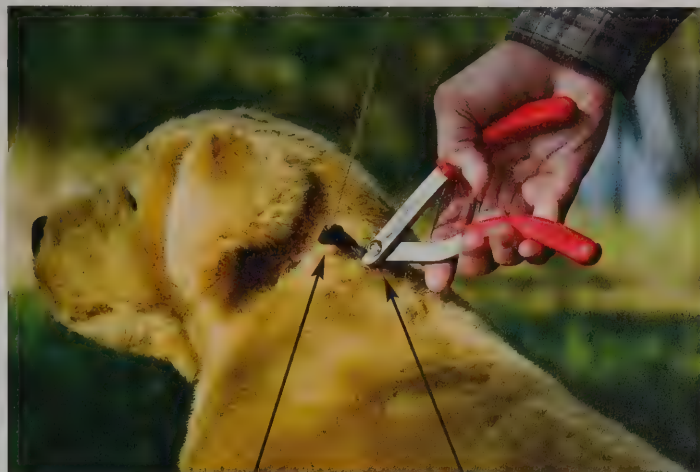
Lethal: Yes

Dog can be left while the owner seeks help: No

Ease of opening: If the locking mechanism can be wiggled free, a snare can easily be removed from a dog's neck. Otherwise, it takes a specialized cable cutter—not a wire cutter or a Leatherman-type multitool—to cut the cable, which should be done where the wire meets the locking mechanism.

Where: Most common on private land, especially around sheep operations, but also on public land, where they are used mainly to catch coyotes.

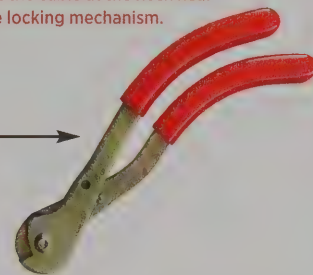
When: Year round on private land. Mostly in late fall and winter on public land.



Toggle the locking mechanism to loosen the cable.

Cut the cable at the neck near the locking mechanism.

Available at trapper supply stores, devices like this American-brand cable cutter cost less than \$25 and will cut through any snare.



FOOTHOLD TRAP

Lethal: No

Dog can be left while the owner seeks help: Yes

Ease of opening: The jaws can be pried apart by placing the trap on the ground and pressing down on the springs on both sides with your feet or the palms of your hands enough for the dog's paw to pull free.

Where: On private land, and on public land beyond legal setback zones

When: Late fall and winter

Press down with your feet or the heel of your hands on both springs to free the dog's paw.

BODY-GRIPPING TRAP

Lethal: Yes

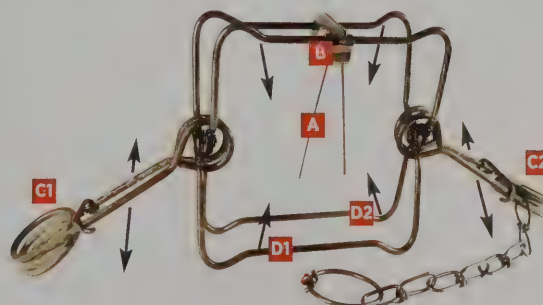
Dog can be left while the owner seeks help: No

Ease of opening: Larger models are extremely difficult to open and require training and ideal conditions. Smaller models are easier to open but require instruction to learn how they operate.

Where: On private land, and on public land beyond legal setback zones

When: Late fall and winter

Note: Many state laws regulate trapping locations, especially where people hike or cross-country ski with dogs. The odds of anyone with a dog encountering a trap are extremely slim.



This body-gripping trap is set for capture. When an animal pokes its head through the opening (A), it trips the latch (B), which allows the closed springs on either side (C1, C2) to open, causing the trap jaws (D1, D2) to snap down on the animal's neck or body. Larger versions are extremely difficult to open without practicing (with supervision) beforehand. Smaller versions are easier to open but require instruction.

A national historic landmark
and one of Montana's
premier tourist attractions,
Bannack State Park
preserves the essence of
a frontier gold mining town
with all its glory, hardship,
and heartbreak.



WHERE THE WEST COMES ALIVE

BY PEGGY O'NEILL. PHOTOS BY JOHN WARNER



I wanted to write you a ghost story. Bannack State Park, near the Pioneer Mountains in southwestern Montana, is a ghost town, after all. Park staff have heard stories of invisible crying babies, mysterious encounters with blasts of cold air, and visions of a forlorn teenage girl in a blue dress. An episode of the Travel Channel's *Ghost Adventures* was even filmed in Bannack. Yet the park is so full of tangible, living history that what *actually* is and was there is far more interesting than what's rumored to exist. ►►





GOODS ON THE GO During the annual Living History Weekend at Bannack State Park, a reenactor purchases canned fruits and preserves from a traveling salesman. The four-day event held each September brings together dozens of reenactors who live meticulously researched roles ranging from schoolteachers and preachers to doctors and blacksmiths.

Let's start with the park's popular Living History Weekend. For four days each September, reenactors portraying characters of 1860s Bannack relive the heyday of this once-booming gold mining town, which served as Montana's territorial capital in 1864 and is designated as a national historic landmark. "The reenactors, exhibits, and artifacts help visitors experience what it was like to live right where the Montana gold rush began," says park manager Dale Carlson.

For most of the year, Bannack's streets and storefronts are empty, encouraging visitors to imagine life here 150 years ago. But today, as I walk down the town's main road during the 2018 living history event, the boardwalks and buildings buzz with reenactors from Montana History Live!, which partners with Montana Fish, Wildlife & Parks for the program. "It was a hardscrabble life, and many people perished just in the journey to get here," says Mark Brown of Whitehall. He and his wife, Sharon, founded the Old West reenactment group.

"That anyone survived after arriving is amazing. You've got to have a lot of respect for the people who stayed here and made it."

I meet Dr. Glick (portrayed by John Barrows of Helena), who's performing a toe "amputation" on an unlucky Bannack resident. "The most enjoyable part of this is the research—reading old medical books," Barrows says. "I do it as accurately as I can." A few buildings down, "Bummer Dan" (Paul Harper of Whitehall) is providing clues to kids for a scavenger hunt. "Bummer Dan" is a prospector famous for losing two bags of gold dust—which he'd taped to his legs anticipating such an encounter—to bandits during the area's first stagecoach robbery. Farther on, the town's schoolmaster (Leif Halvorson from Sidney) teaches visiting children to sing "My Old Kentucky Home." The kids, who can't tell if he's acting or the real deal, are mesmerized.

Up and down the dusty dirt road, roughly 40 Old West miners, bakers, bartenders, and others are brought to life, each role

researched and reenacted to the finest detail: Prospectors crouch in Grasshopper Creek, panning for gold; a blacksmith strikes his hammer on a red-hot iron at the forge; the proprietor of the general store wraps dry goods in brown paper and twine; freight drivers share stories over shots of whiskey in the old saloon.

The reenactors have as much fun as the visitors. "Bannack's Living History Weekend allows you to be someone you'd like to be—or maybe someone you wouldn't," says Glenn Davis, who lives near Butte and plays a miner and a barkeep.

CRIES FOR HELP?

If Living History Weekend restores the Wild West to its rough-and-tumble glory, Bannack's annual Ghost Walks, held in late October, resurrect the past by bringing the town's dead back from the grave.

Spooky? Consider the setting: nighttime in a western ghost town, in the middle of nowhere, lit only with lanterns and bonfires. Live reenactors play the ghosts of rogues and wretches from the town's early days, when gravediggers were kept busy burying those who died from gunshots, accidents, and infectious diseases.

To lighten the mood—because afterward things turn real eerie, real fast—the tour starts off with some jokes.

"Did you hear about the guy who didn't pay his exorcist? He was repossessed."

"Why did the game warden arrest a ghost? He didn't have his haunting license."

Cringeworthy, yes. Yet last fall when I took part in the Ghost Walks, I enjoyed the corny humor. It provided contrast to the somber stories of Bannack's violent and tragic past that I later heard during the event, held the Friday and Saturday before Halloween.

The most famous story that came to life that night was told by a reenactor portraying the town's most infamous resident, Henry Plummer. A convicted outlaw who had terrorized towns across the West, Plummer ran for sheriff in 1863 and actually won. Less than a year later, he was hanged, along with two deputies, for allegedly leading a group of outlaws, self-named the Innocents, who robbed

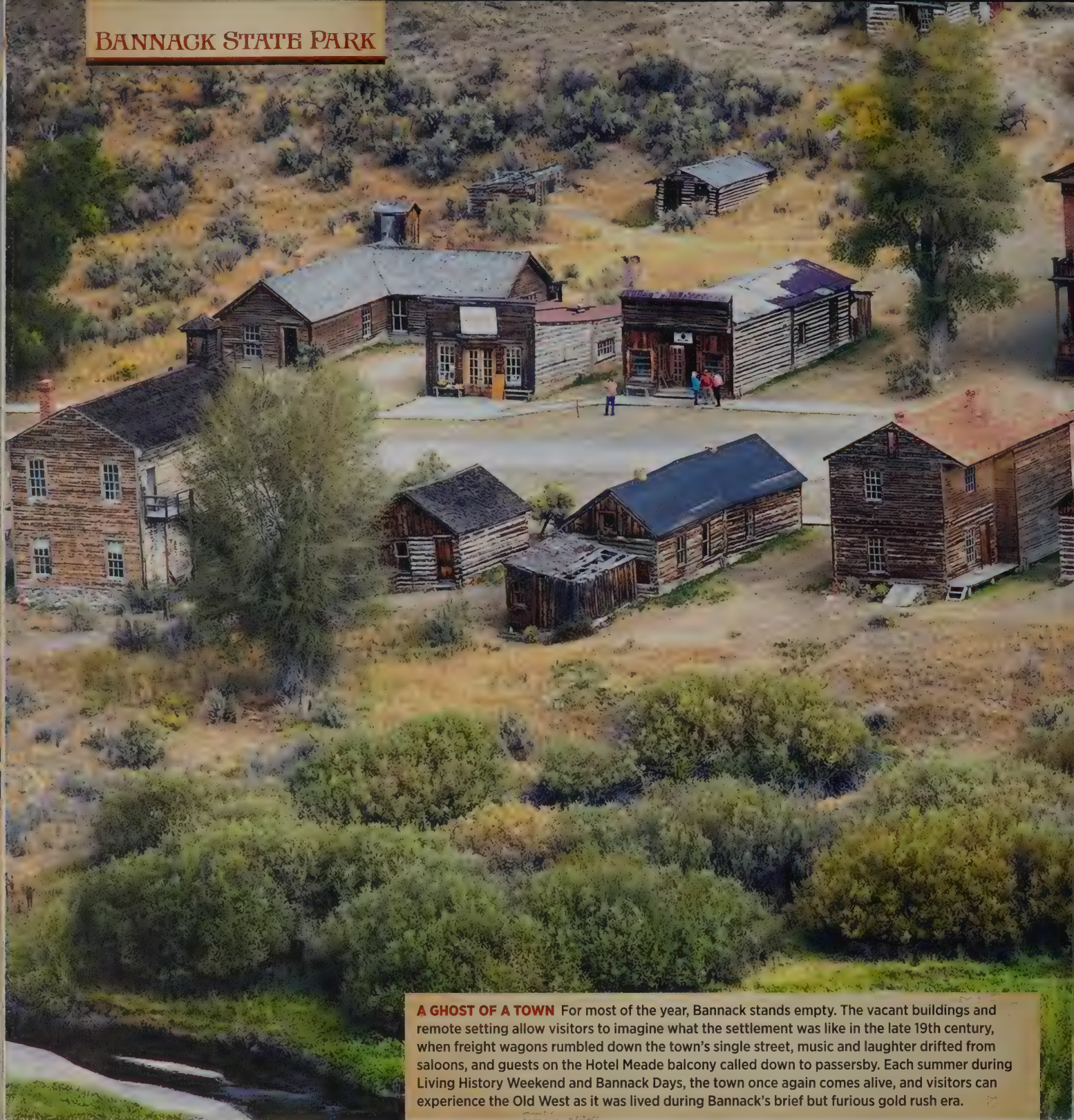
"THE REENACTORS, EXHIBITS, AND ARTIFACTS HELP VISITORS EXPERIENCE WHAT IT WAS LIKE TO LIVE RIGHT WHERE THE MONTANA GOLD RUSH BEGAN."



Peggy O'Neill is chief of the FWP Information Bureau. John Warner is a freelance photojournalist in Billings.



HOW THE WEST WAS LIVED This page, clockwise from top: As a gunslinger provides commentary, the proprietress of a boardinghouse plucks a chicken for dinner; visitors and other reenactors watch Dr. Glick (John Barrows of Helena) prepare to “amputate” a gangrene toe while his patient takes a slug of whiskey to ease the pain; a park visitor poses with Dennis Borud, Lewistown, who portrays placer miner Lyman Brokaw. Opposite page: Bannack State Park manager Dale Carlson takes a break in front of a backdrop used for old-time photographic portraits.



A GHOST OF A TOWN For most of the year, Bannack stands empty. The vacant buildings and remote setting allow visitors to imagine what the settlement was like in the late 19th century, when freight wagons rumbled down the town's single street, music and laughter drifted from saloons, and guests on the Hotel Meade balcony called down to passersby. Each summer during Living History Weekend and Bannack Days, the town once again comes alive, and visitors can experience the Old West as it was lived during Bannack's brief but furious gold rush era.

stagecoaches and killed more than 100 people during an eight-month reign of terror.

Mary Edgerton, wife of Sidney Edgerton, Montana's first territorial governor, wrote in a January 17, 1864, letter: "There was a Vigilance Committee formed at [nearby] Virginia City and a number of these highway men were hanged. Before they were hung,

they confessed and implicated many others. Their confession was that there was a regularly formed band of them and that the sheriff of this district was the captain."

Though some writers in recent years have suggested that the Vigilantes, as they were known, were more motivated by politics and post-Civil War disputes than justice,

most historians agree that Plummer and his gang were indeed murderers who received justifiable punishment. Some say the sheriff's angry ghost still haunts the town.

Another Bannack resident who became famous after death was Dorothy Dunn. Dorothy, 16, died in 1916 while wading with friends in a dredge pond near town. She



stepped off a ledge into deeper water and drowned. The teenager had lived and worked in the Hotel Meade, where a room is now named in her honor. Many visitors claim to have seen an apparition in a blue dress wandering the hotel corridors or through town at night. Others have said they felt mysterious rushes of cold air while in the

hotel, even on summer days.

Then there are the weeping infants. Down the road and across the street from the Hotel Meade is the Bessette House, where residents with influenza, scarlet fever, diphtheria, whooping cough, and other highly contagious and deadly diseases were quarantined in the early 20th century. Several visitors have

"OUR FOCUS IS TO MAINTAIN THE TOWN RATHER THAN RESTORE IT. VISITORS ARE MEANT TO SEE IT AS AN ABANDONED MINING TOWN."

reported hearing the sounds of babies crying in the house and believe it's haunted by children who died there.

Park manager Carlson has lived on the park grounds since he began working there 16 years ago and has yet to see a ghost or hear the cries of an invisible baby. Park administrative assistant Lisa Hamar hasn't either, though she admits she still gets "creeped out" whenever she's in the hotel. "I'm not sure if it's the stories

from a few buildings.

Modern-day disasters have proved more hair-raising for Carlson. A sudden downpour in the surrounding hills in July 2013 caused a flash flood that sent a three-foot-high wall of water, mud, and rocks down Hangman's Gulch into the ghost town. "At one point the floodwater pinned a woman against a fence," Carlson says. The woman and other park visitors were safely evacuated, but the flood

swept away and the rest was filled with mud and debris. Carlson says cleanup for the town cost about \$2 million, most of which was covered by insurance.

That was the only year that the park's biggest event, Bannack Days, was canceled. The popular family weekend, which draws up to 5,000 visitors over two days, features horse-and-wagon rides, staged shoot-outs, and gold panning. While listening to cowboy songs and period music throughout the event, visitors can experience a blacksmith shop, surveyor's camp, and U.S. Cavalry camp, as well as demonstrations of basket making, candle making, mule packing, and tinsmithing. They can also listen as impassioned townsfolk debate the pros and cons of women's suffrage.

Bannack Days happens each summer on the third weekend of July. Unlike Living

"I GET CREEPED OUT IN THE HOTEL, BUT I'M NOT SURE IF IT'S THE STORIES OR JUST THE WAY I FEEL."

or just the way I feel," she says.

Park ranger John Phillips says the scariest things he's encountered at the park are the rattlesnakes he's been called on to remove

damaged 50 of Bannack's 60 historic buildings. For instance, much of the Assay Office, built as a site for testing the quality of gold and later converted to a general store, was

WHAT DOES 3-7-77 SIGNIFY?

One of the most enduring mysteries related to Bannack is the number sequence "3-7-77."

Vigilante committees painted the numbers on cabin doors or tents in several Montana towns and settlements as a warning for the occupants to leave town. It was long assumed the numbers originated with the Bannack Vigilantes, who hanged the outlaw sheriff Henry Plummer in 1864. But historians have found no print record of the numbers appearing until an 1879 issue of the *Helena Herald*.

What did the numbers signify? In *A Decent, Orderly Lynching*, historian and journalist Frederick Allen writes that the numbers might have meant the recipient was being warned to get out of town (by purchasing a \$3 ticket on the next 7 a.m. stagecoach to take the 77-mile trip from Helena to Butte).

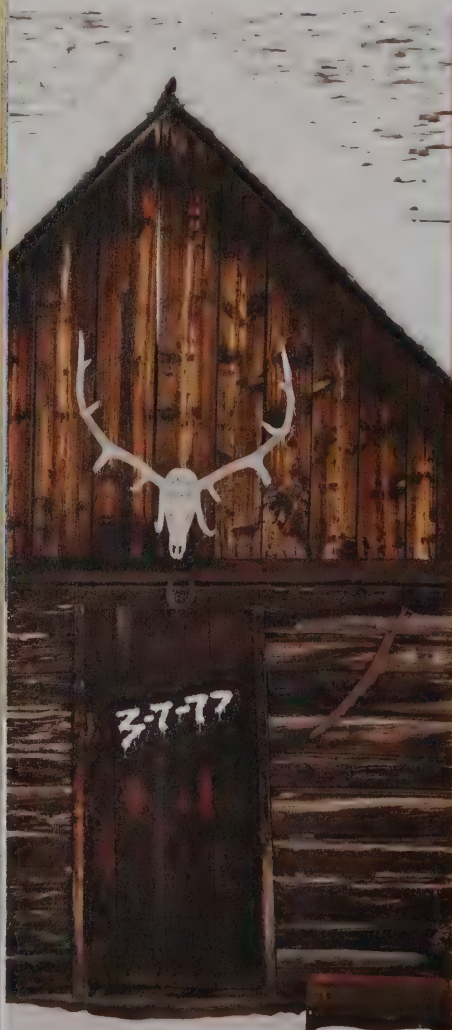
Other theories posit that because the numbers add up to 24, they meant a person had 24 hours to vacate the premises (though why not just write "24"?); they represented the dimensions of a grave, 3 feet by 7 feet by 77 inches (though why not list all the dimensions in inches?); they stood for March 7 of 1877 (though historians can find no significant events anywhere in Montana Territory on that date); or they were numbers representing membership structure of the Freemasons, who established Bannack Historic Lodge No. 3-7-77.

Most historians agree that the Vigilantes and other western vigilante committees were necessary in a time before law enforcement and justice institutions were established. But they also point out that vigilantes wore out their welcome with the public once sheriff's departments and law-based trials were instituted after Montana was made a U.S. territory in 1864 and then granted statehood in 1889. Vigilante mobs were still hanging people and pinning "3-7-77" to their backs as late as 1917.

Nonetheless, in 1956 the Montana Highway Patrol added 3-7-77 to officers' shoulder patches and vehicle door insignia. "Regardless of its meaning...3-7-77 is emblematic of the first organized law enforcement in Montana," reads the Association of Montana Troopers website. "The Montana Highway Patrol, in adopting this early symbol, honors the first men in the Montana Territory who organized for the safety and welfare of the people. For that same reason, the Association of Montana Troopers has carried on that tradition by placing the legendary 3-7-77 on their patch as well."

The numbers live on. In 2013, the Montana Highway Patrol changed its toll-free phone number to 855-MHP-3777.

—Tom Dickson is editor of *Montana Outdoors*





"IS THAT REAL GOLD?" Reenactor Mike Schweitzer of Sidney, who portrays a tenderfoot new to prospecting, teaches a school group the art of panning for gold in Grasshopper Creek.

History Weekend, with its attention to historical detail, Bannack Days takes some liberties with verisimilitude. "It's much more about being a fun, family festival than an accurate portrayal of that era," says Carlson.

MONTANA'S GOLD RUSH

Bannack was named for the Bannock Tribe, whose people are native to today's southwestern Montana and parts of Idaho, Utah, and Oregon. Lewis and Clark passed nearby in 1805 while traveling along the Beaverhead River toward Lemhi Pass.

But it was gold that put Bannack on the map in 1862, when John White and John McGavin discovered nuggets in Grasshopper Creek. The pair couldn't keep their discovery a secret, and within months the town swelled from 400 to more than 3,000 people, including prospectors, shady businessmen, outright criminals, upstanding citizens, prostitutes, "respectable women," and children.

Bannack was among the wildest of Wild West towns, a place where lucky prospectors cashed in their haul before heading to the nearest tavern, sometimes later ending up in the nearest graveyard. "I don't know how many deaths have occurred this winter but that there have not been twice as many is entirely owing to the fact that drunken men do not shoot well," resident Emily Meredith wrote in 1863, as recounted by author and historian Don Spritzer in *Roadside History of Montana*. "Bullets whiz

around so, and no one thinks of punishing a man for shooting another."

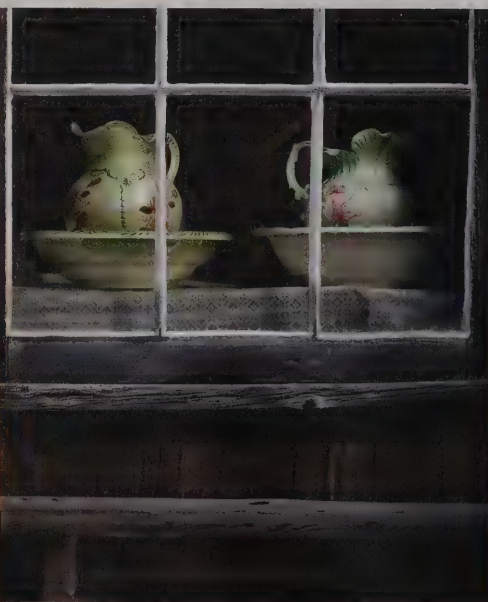
Bannack's boom and bust happened so quickly that the town lost its title of territorial capital within a year. When gold was found in nearby Virginia City, prospectors moved there, taking the territorial capital designation along with them. But Bannack lingered for another 80 years. The post office closed in 1938 and the school hung on until the early 1950s. In 1954, with help from Elfreda Woodside and C. W. Stallings, the newly formed Beaverhead County Museum bought most of

the town of Bannack. The museum then gave the property to the state of Montana. Stallings later donated remaining lots and buildings to the museum, and eventually the entire ghost town was handed to Montana Fish, Wildlife & Parks to manage as a state park.

Unlike Virginia City, which has been partially restored and is still a living town, Bannack has retained its ghost town setting. Supporters decided to preserve what was left. "Our focus is to maintain the town rather than restore it," Carlson says. "Visitors are meant to see it as an abandoned mining town."



1862 PRICES	
FLOUR	\$25 \$30 PER 100 lbs.
BEANS	\$25 PER 90 lbs.
SALT	\$25 PER 100 lbs.
FRESH EGGS	.15lb
BUTTER	1.00lb
TURNIPS	.20lb
COFFEE	1.00lb
VINEGAR	4.00gal
TEA	3.00lb
SALERATUS	.60lb
SOAP	1.60lb
CREAM OF TARTAR	2.50lb
DRIED APPLES	.60lb
POWDER	3.60lb
LEAD	1.00lb
CAPS	1.00box
AX AND HIVE	5.00 (HANDLE)



TIME TRAVEL This page, clockwise from top: Susan O'Neal, who, with her husband, runs the Mercantile and Assay Office, tells visitors about life in the 1860s; reenactor Mark Brown demonstrates early photography; provisions at the mercantile. Facing page: A Bannack street scene turns dreamy when viewed through an old glass window.



DEAD OF NIGHT During the annual Ghost Walks in late October, the Just-Us Old West Reenactors portray vigilante “justice” as part of their spooky-yet-educational skit.

“BULLETS WHIZ AROUND SO, AND NO ONE THINKS OF PUNISHING A MAN FOR SHOOTING ANOTHER.”



Keeping even a ghost town in shape is expensive. For instance, a \$1.6 million fire detection system was recently installed in the ghost town’s most historically significant buildings. FWP also must maintain the constantly deteriorating roofs, windows, doors, and walls of a place frozen in time. In addition to its share of the state vehicle license fee that goes to FWP’s Parks Division, Bannack receives grants, donations, and occasional legislative appropriations. Many donations come through the Bannack Association, a grassroots organization that works with FWP to promote and preserve the park.

Besides Living History Weekend, the Ghost Walks, and Bannack Days, the park offers other attractions to the 48,000 people who come each year. Visitors can do-si-do at a barn dance in August, ice skate in winter (with free skate rentals and a cozy warming

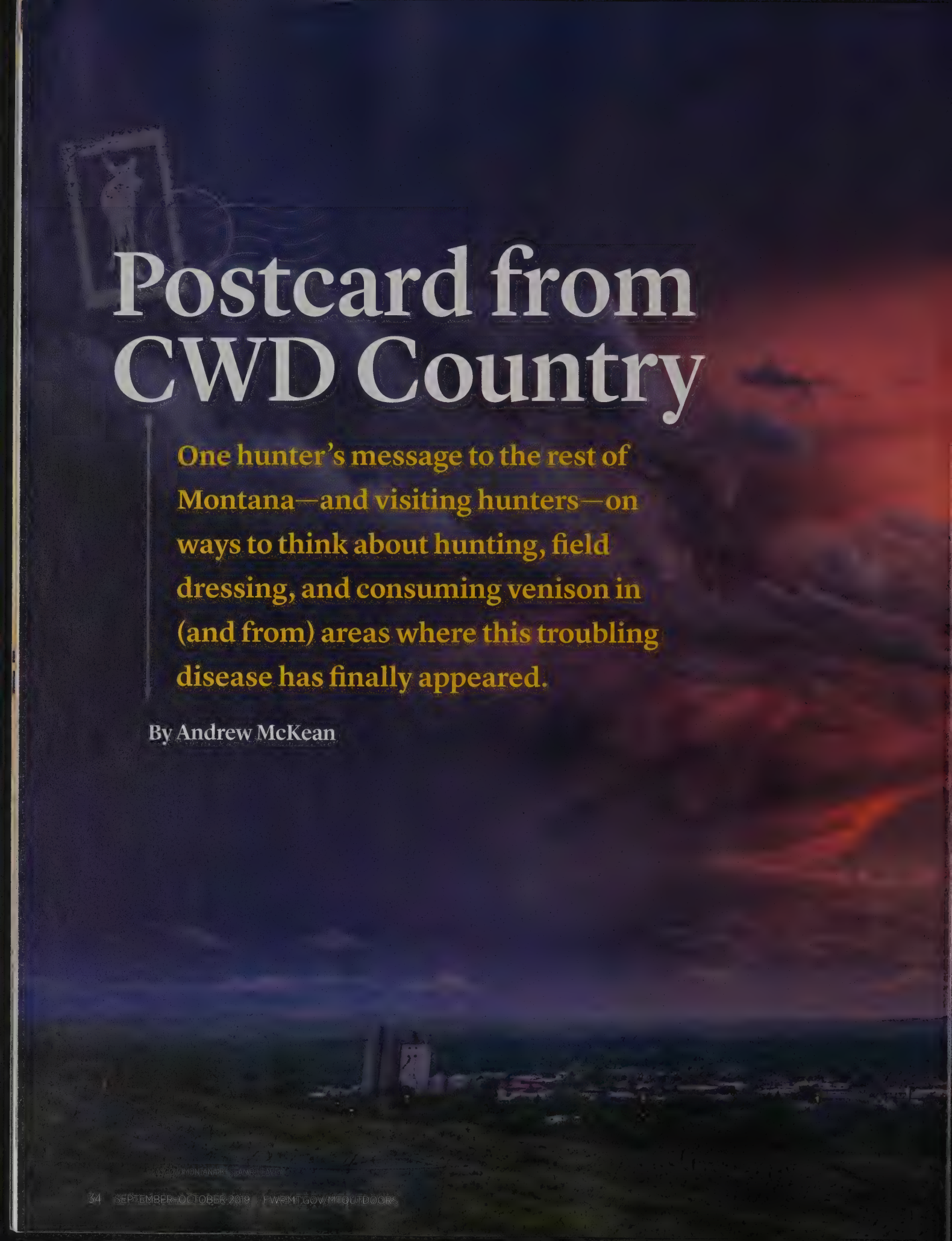
house), hike and bike on the park’s two trails, and catch trout in Grasshopper Creek. At two small campgrounds along Grasshopper Creek, towering cottonwoods provide shade from the hot midsummer sun.

Every other year on the second Saturday of January, Henry Plummer gets hanged all over again during a reenactment. No wonder his angry spirit still lingers.

Okay, so I’m telling a ghost story after all.

Whether or not you believe in the supernatural world, there’s no disputing that Bannack provides opportunities to encounter real-life brushes with the town’s colorful past. Living history isn’t supposed to be scary, but even so, those glimpses into the lives that other people once led, people just like you and me, puts a little tingle in my spine. 🐾

Bannack’s 2019 Living History Weekend runs September 19-22. The 2019 Ghost Walks are October 25-26. For more information, to make reservations, or to volunteer for the Ghost Walks, call (406) 834-3413.



Postcard from CWD Country

One hunter's message to the rest of Montana—and visiting hunters—on ways to think about hunting, field dressing, and consuming venison in (and from) areas where this troubling disease has finally appeared.

By Andrew McKean



TROUBLE BREWING Glasgow sits in the epicenter of one region where CWD has been found in deer herds. The discoveries, which began in the fall of 2017 and continued well into 2019, are requiring many hunters to change the way they approach big game hunting, field dressing, and venison consumption.



I'm a deer hunter who lives in Glasgow, and I've been waiting for chronic wasting disease for years. Not anticipating it. I don't want it here or anywhere, but its arrival seemed inevitable. The disease has been creeping toward our borders for two decades, moving south through Saskatchewan, north from Wyoming, and west across the Dakotas.

Then, last fall, 21 mule deer tested positive for CWD in my county and neighboring Montana counties strung along the Canadian border. It's also in south-central Montana, and this past spring and summer, several white-tailed deer near Libby tested positive.

The presence of CWD affects how you prepare for a hunt and how you deal with the animal if you're successful. It can skew your appreciation of wild venison. It complicates meat care and requires you to learn special skills and follow additional rules. It adds a layer of preparation and, if I'm being honest, anxiety about hunting in CWD country. The disease may decrease some big-game populations over time. But in the near term it hovers over hunters like the sword of Damocles, a threat that is worrying because of its invisibility and the remote—though so far unsubstantiated—human health concerns.

(Though I refer to "deer" throughout this article, CWD also infects elk and moose. All state CWD-related regulations and all my suggestions for venison management apply to those species as well. Pronghorn, mountain goats, and bighorn sheep are not affected.)

If you don't have CWD where you live and hunt, you should hope it doesn't come anywhere near you. I don't want it to spread beyond the pockets where it has already become established on Montana's Hi-Line, areas south of Billings, and around Libby.

That's why I'm writing this, a postcard from CWD country, with the hope that together we can learn how to deal with the challenges and slow its spread.

If you let it, CWD could be that one extra hassle that keeps you from hunting this year. It could create a worry that maybe deer meat isn't safe to feed your family. Or it could be so abstract that you ignore all the new rules aimed at preventing its spread and carry on as normal.

But it doesn't have to be any of those things. CWD is pretty simple to understand, and the rules designed to limit its spread can be as easy to follow as other hunting regulations, like adhering to legal shooting hours or tagging your animal before moving it.

My hope is that after you read this, you'll understand that now that CWD has arrived

in Montana, nothing is normal, but neither is anything especially dire. And that you'll be ready to help me and other hunters slow its spread and ensure that CWD remains as rare and unusual as possible.

BIOHAZARD BUCK

Sue Dalbey is a meat hunter, and she's one of 21 people who shot a CWD-positive deer last fall in FWP's Region 6 (northeastern Montana).

On the final day of the 2018 season, Sue and her husband, Steve, an FWP regional fisheries manager, drove north from their home in Glasgow to a chunk of Bureau of Land Management property just south of the Canadian border, a place that has produced plenty of mule deer venison for their family over the years.

They spotted some deer, and Dalbey made a stalk that culminated in a clean shot on a young mule deer buck. The deer had acted normal, and it looked fine once down except for dried-mustard "sleep" that crusted its eyes. But when the Dalbeys got the buck home and started skinning, they noticed that it carried no fat and that a waxy yellowish membrane covered the muscles. "He didn't look very healthy, like he was fighting an infection or something," Dalbey

FACING CWD Sue Dalbey of Glasgow with the young mule deer she shot last fall. After learning that the buck tested positive for CWD, she decided not to consume the deer. "That was difficult. We are very conscientious about not wasting meat," she says.



told me. "We decided we'd have it tested for chronic wasting disease and, once we heard back, we'd decide whether to keep the meat. The weather turned cold, so we weren't worried about meat spoiling while we waited for the test results."

It's worth noting that animals infected with CWD can often appear healthy. And that sick-looking deer are not necessarily infected with the disease. Still, experts say an unhealthy-appearing animal is a sign to look for, so the Dalbeys' caution was well founded.

The results came faster than expected, delivered via a phone call from FWP. The test was positive for CWD.

"It was a big bummer," says Dalbey. "The first thing Steve and I realized was that it was too late to get a replacement deer tag, since hunting season was over. Both of us had been looking forward to a big batch of jerky."

Disposing of the infected deer left a different kind of taste in the Dalbeys' mouths. Standard disease-containment protocol requires disposing of infected remains in municipal landfills. "The hardest thing about this was treating that deer as a biohazard," says Dalbey. "We had to dump it like it was trash. We are very conscientious about not wasting meat, and there we were throwing an entire deer in the landfill."

CONSUME WITH CARE

There's a good reason diseased carcasses must go in landfills. The infectious agent of CWD, hardy malformed proteins, endure in the environment for years, potentially infecting other animals.

The Dalbeys could have consumed the deer, even after learning it carried CWD. There's no legal requirement that they abandon the carcass. But they did the right thing by discarding it, says Jennifer Miller.

"There is no known transmission of CWD to humans, but the World Health Organization and Centers for Disease Control recommend not consuming meat from an animal known to be infected with CWD," says Miller, Montana's point person for the

My hope is that after you read this, you'll understand that now that CWD has arrived in Montana, nothing is normal, but neither is anything especially dire. And that you'll be ready to help me and other hunters slow its spread and ensure that CWD remains as rare and unusual as possible.

human variants of transmissible spongiform encephalopathies (TSEs), which include CWD and the brain-wasting mad cow disease. A nurse and communicable disease consultant with Montana's Department of Public Health, Miller tracks these human "prion diseases"—rare, progressive neurodegenerative disorders. Though she says there is no evidence that CWD can jump the species barrier to humans, she recommends

"an abundance of caution to minimize risk as much as possible."

This risk is an important subtext to the recent evidence of CWD in Montana deer herds. Even the remote possibility that infected venison might make somebody sick with an incurable brain-melting malady affects many hunters' decisions whether to tag a deer in CWD country.

But there are ways to reduce the risk to near zero, says Emily Almberg, a disease ecologist in FWP's Bozeman wildlife laboratory.

"If you're hunting in a known CWD-positive area, test the meat. In many cases, FWP will pay for the test," says Almberg, who earned her doctorate in wildlife disease ecology at Pennsylvania State University. "If the test comes back positive, don't eat the meat, simple as that."

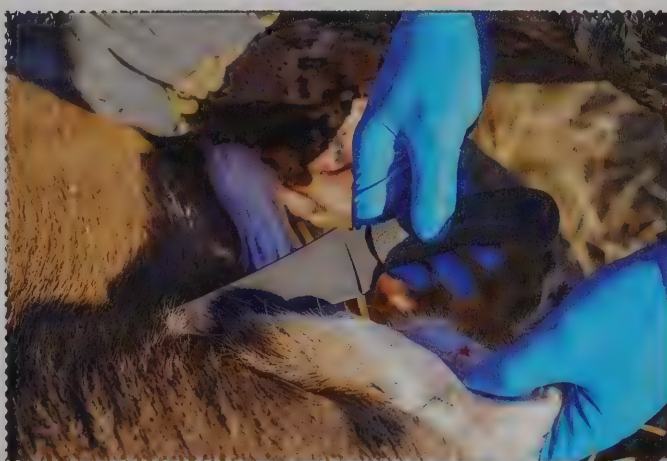
If you're hunting in an area where CWD hasn't been detected and you want to test your meat, learn how to extract samples needed for testing—see the sidebar on page 39—and pay for your own test. "It only costs about \$18 for the peace of mind of knowing whether your meat is safe to eat," Almberg says.

CARCASS MANAGEMENT

Beyond testing, health experts also recommend avoiding contact with the most disease-prone portions of a carcass, including the brain, spinal tissue, and lymph nodes. And wear gloves while field dressing animals, they advise.

One of the most important ways hunters can prevent the spread of CWD elsewhere in Montana is by not transporting a potentially infected animal or its body parts. FWP has established CWD Management Zones around areas of known CWD infection. It's illegal to transport the whole carcass, whole head, brain, or spinal column outside a management zone unless the animal tests negative for CWD.

Because there's no field test that can immediately determine if an animal is infected, any deer harvested in a CWD Management Zone should be considered infected until you find out otherwise, by submitting it for



SAFETY MEASURES Though no evidence exists that CWD can infect humans, public health officials recommend using rubber gloves when field dressing elk, deer, and moose; minimizing the handling of brain and spinal tissue; and, if hunters are especially concerned, having animals—especially deer in designated CWD Management Zones—tested for the disease.

testing. Because results take anywhere from 10 days to two weeks, hunters need to prepare to freeze or process the animal until they learn the results.

A quick note on that topic, one that I learned repeatedly last season. My family submitted five deer for CWD testing, but due to the time lag between submission and results, we had to stabilize the carcasses for a few weeks. Because we butcher our own meat, I didn't want to invest the time and freezer paper required to process a deer only to learn that it was CWD positive and have to take the meat to a landfill. So we quartered all five deer, then froze the quarters until we learned that they had tested negative. Then we thawed and processed them as normal.

If that sounds simple, it's not. First, you need freezer space for storing 20- to 60-pound quarters, which require more room than you'd expect. Then you need to thaw them at the right rate so the exterior doesn't dry out or spoil while the interior is still frozen. Then get busy cutting and wrapping. But be aware that thawed meat, once refrozen, doesn't store as well as meat that has never been thawed.

Or, as some hunters are doing, you can butcher your deer while awaiting the test results, freeze the portions, and cross your fingers that the results will be negative.

THE TRAVEL DILEMMA

Those are options for home butchers who live in CWD Management Zones. But many who hunt in the zones don't live there, and they need to plan how to transport their deer home. FWP's rule is pretty straightforward: The whole carcass, whole head, brain, or spinal column of any deer, elk, or moose harvested inside the boundaries of a CWD Management Zone must not leave the zone until a CWD test comes back negative.

This transportation restriction makes abundant sense from a disease-containment perspective. After all, the best way to avoid spreading CWD is to avoid moving potentially infected dead deer. But from a practical perspective, this requirement has been one of

Formerly the editor-in-chief of Outdoor Life and now a freelance writer, Andrew McKean lives in Glasgow.

"If you're hunting in a known CWD area, test the meat. In many cases, FWP will pay for the test. If the test comes back positive, don't eat the meat, simple as that."



the most misunderstood and hardest to follow by hunters in CWD country.

Let's start with carcass care. FWP recommends quartering or boning out a deer or elk in the field, leaving behind the head and spinal column to ensure that infectious agents aren't moved to a new area. But most hunters haven't learned the "gutless method" of field dressing, which leaves the organs intact inside the chest cavity and abdomen but removes the four quarters, backstraps, and tenderloins, all of which can be legally transported out of a CWD Management Zone.

A quick Internet search will turn up video tutorials on this method, but beginners can expect the process to be long and messy and best done with a partner and plenty of game bags to contain detached quarters and loose meat. And remember, if you leave the head at the kill site, you'll want to keep the genitals as evidence of the animal's sex. If you plan to have your animal tested, you'll also have to extract the retropharyngeal lymph nodes in the field (see sidebar, opposite page) or bring out the head.

The good news is that once you master gutless field dressing, you can bone a deer out in 45 to 60 minutes. And because they are no longer attached to the skin or carcass,

which is left behind, breaking down the quarters back home takes about half the time as before.

If you want to keep the antlers of a special buck, you'll need to learn how to remove all the brain matter from the skull, so you don't transport nervous tissue outside the CWD Management Zone. That requires intense boiling, brushing, and powerwashing, something most hunters far from home aren't equipped to do. Or find a taxidermist inside the zone where you can leave your trophy. Another option is to remove the antlers from the base with a small hacksaw and have a taxidermist back home mount them on another deer skull.

A PROCESSOR'S PERSPECTIVE

Then, say you want to have your animal commercially processed. No problem, as long as you take it to a meat processor inside the CWD Management Zone. Doug Wixson is one such butcher. He owns Treasure Trail Processing in Glasgow, and takes in several hundred hunter-killed deer, elk, and pronghorn each fall. Last year, two deer that he butchered tested positive for CWD.

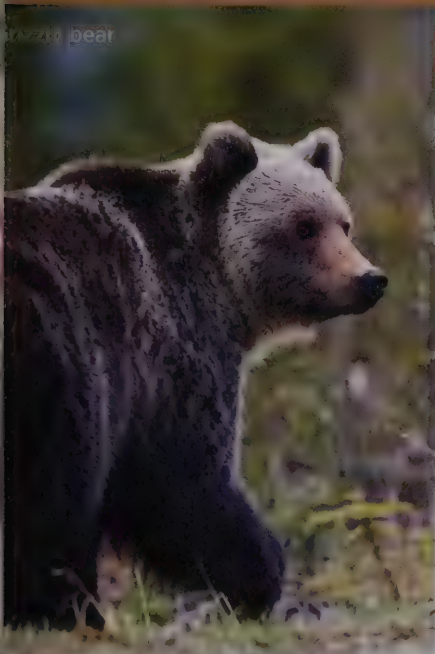
Wixson says the presence of CWD has forced some changes to his business. He encourages his clients to get their animals tested for CWD, but he doesn't have room to store animals while he waits for test results. So, starting this fall, he'll process those animals with pending CWD test results later in the day, so that a potentially positive carcass does not contaminate any other meat.

And he'll offer more single-animal processing services, rather than "batch processing," the term for grinding the meat of several animals in one bulk sausage or burger mix.

BAD BUNCH: Many game processors "batch process"—grind the meat of several animals in one bulk mix for burger or sausage. The practice is especially worrisome in the new era of CWD.



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All that extra care will require the game butcher to charge more to process deer from CWD areas.

"I understand the problem with batch processing," says Wixson. "I don't want to be inadvertently mixing a CWD-positive animal with uninfected meat, because then it all has to be thrown out. But I also want people to know that if they ask for a single-animal process, they'll need to pay more. The cost of processing a single animal at a time is going to be twice what I normally charge, at least. How many people are going to pay that? And how many are going to pay me once they learn that their meat has CWD and has to be thrown away?"

Granted, Wixson is just one meat processor. Others may be less—or more—worried about what CWD means to their bottom line. But as a business owner in the heart of CWD country who deals with deer carcasses throughout the hunting season, his concerns are worth noting.

As for Sue Dalbey, the Glasgow hunter, she's still in the game, but with some new considerations. "I enjoy hunting mule deer too much to quit," she says. "Will I maybe watch animals a little longer before I pull the trigger, to make sure they look healthy? You bet. Will I hunt earlier in the season so that, if the animal does test positive, I can get a replacement license from FWP? Yes. Will I opt to hunt somewhere else, maybe outside the CWD Zone? Possibly.

"And will I test every deer we shoot around here from now on? Absolutely." 🐾

How to submit a sample for CWD testing

FWP's understanding of where and how much CWD is infecting Montana's deer herds is gained mainly by testing samples from hunter-harvested deer, elk, and moose. In what are known as "Priority Sampling Areas," wardens, biologists, and technicians at check stations ask hunters' permission to remove a special lymph node that will reveal distorted protein concentrations in infected animals.

The tests, conducted by technicians at Colorado State University (CSU), cost about \$18 apiece, but FWP underwrites the expense for hunters who harvest animals from Priority Sampling Areas around the state. These sampling areas change year to year, as FWP looks for CWD in suspected areas and tries to determine prevalence of the disease where it has already been found. See page 43 for a map showing the priority areas.

"We want to encourage as much testing as possible, so it's in everyone's interest to lower barriers—in terms of cost and accessibility—as we determine the distribution and prevalence of CWD in the population," says Emily Almberg, FWP's wildlife disease ecologist.

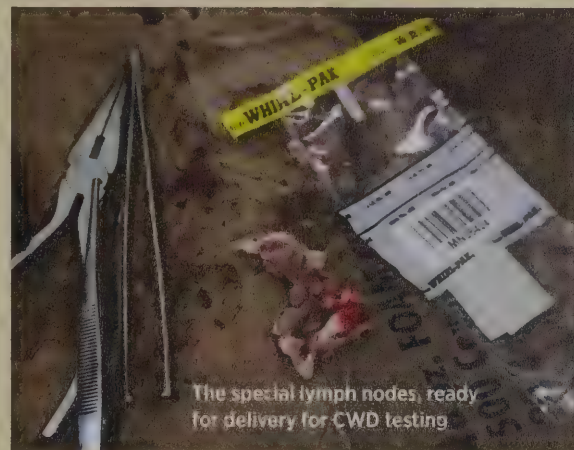
Hunters can also have their deer tested on their own by submitting a sample of the retropharyngeal lymph node, though they'll need to pay for the test and postage if the animal was taken outside of the Priority Sampling Areas. The process is clearly explained on the FWP website (fwp.mt.gov):

- ▶ On the right side of the FWP home page, click on the brown CWD box.
- ▶ Once on the CWD page, scroll down to "submitting a sample." There you'll find instructions, including a video showing how to remove these special lymph nodes, which are small glands in the neck behind the jaw.

As you'll see in the video, the nodes are exposed by cutting across the throat, bending the head back, and finding and removing the lymph glands, generally with a tweezers or needle-nose pliers. "It can take some studying so that you don't mistake a saliva gland for a lymph node," says Brent Race, staff scientist at the Rocky Mountain Laboratories in Hamilton, Montana, part of the National Institutes of Health.

Once they are removed, hunters should place the lymph nodes in a sealed bag, box the bag with an ice pack, and ship it to CSU using one- or two-day delivery (details are on FWP's CWD website page). "People should take care that the sample doesn't leak," says Race. "And it's a good idea to keep it cold. But the reality of the CWD prion is that it doesn't decompose, even if the tissue around it does. So even fairly degraded samples can still be effectively tested."

Each sample submitted by FWP will be given a unique number, which hunters can track on the FWP website. Test results are generally posted within 10 to 14 days. If a sample is positive, indicating CWD infection, the department will contact the hunter. If the sample is negative, the hunter will see the notification on the website and then can consume the meat with all the gusto that healthy wild venison deserves.



FWP CWD information:
fwp.mt.gov



Using “Zone Defense” to Contain CWD

Montana’s approach to slowing the spread of the deadly deer disease combines surveillance, testing, transportation restrictions, and increased harvest in key areas. **By Andrew McKean**

Chronic wasting disease, the incurable brain-melting malady that kills every member of the deer family it infects, has become a normal—if unwelcome—part of Montana’s wildlife management landscape over the past two years.

The disease, and efforts to slow its spread and understand its character, are now as much a part of Montana Fish, Wildlife & Parks operations as counting spring fawns or maintaining hunting access. Since CWD was first detected in the state’s wild deer in 2017, the department has had to ensure that hunters understand how to adjust their hunting and game-care expectations (see “Postcard from CWD Country,” page 34), and recognize the long-term risk the disease poses to Montana’s deer, elk, and moose populations.

Hunting seasons that open this September will test the department’s CWD man-

agement strategy. FWP wants to contain the disease, for as long as possible, within a dozen counties along Montana’s northern and southern borders, and in the Libby area where CWD was recently discovered. The strategy aims to keep CWD an anomaly for most of the state’s deer and elk hunters.

At the same time, the department hopes hunters don’t dismiss CWD simply as an inconvenience, because it is in fact hugely significant to big game hunting in Montana.

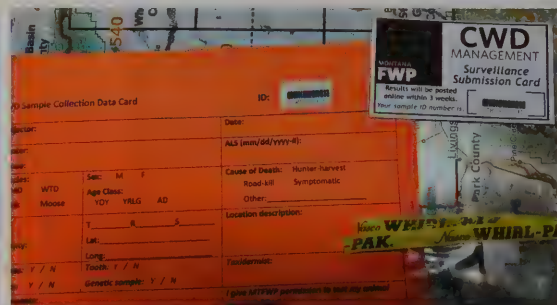
“Chronic wasting disease potentially affects everything from hunting participation to population management, and, though it has not been shown to transmit to humans, people are concerned about any risk to human health,” says John Vore, chief of FWP’s Game Management Bureau. “It represents a watershed mark in our department’s history. There’s our work before CWD, and then there’s our response following its discovery

in Montana. There’s no putting the genie back into the bottle or wishing that we didn’t have it. It’s here, and now we are dealing with it.”

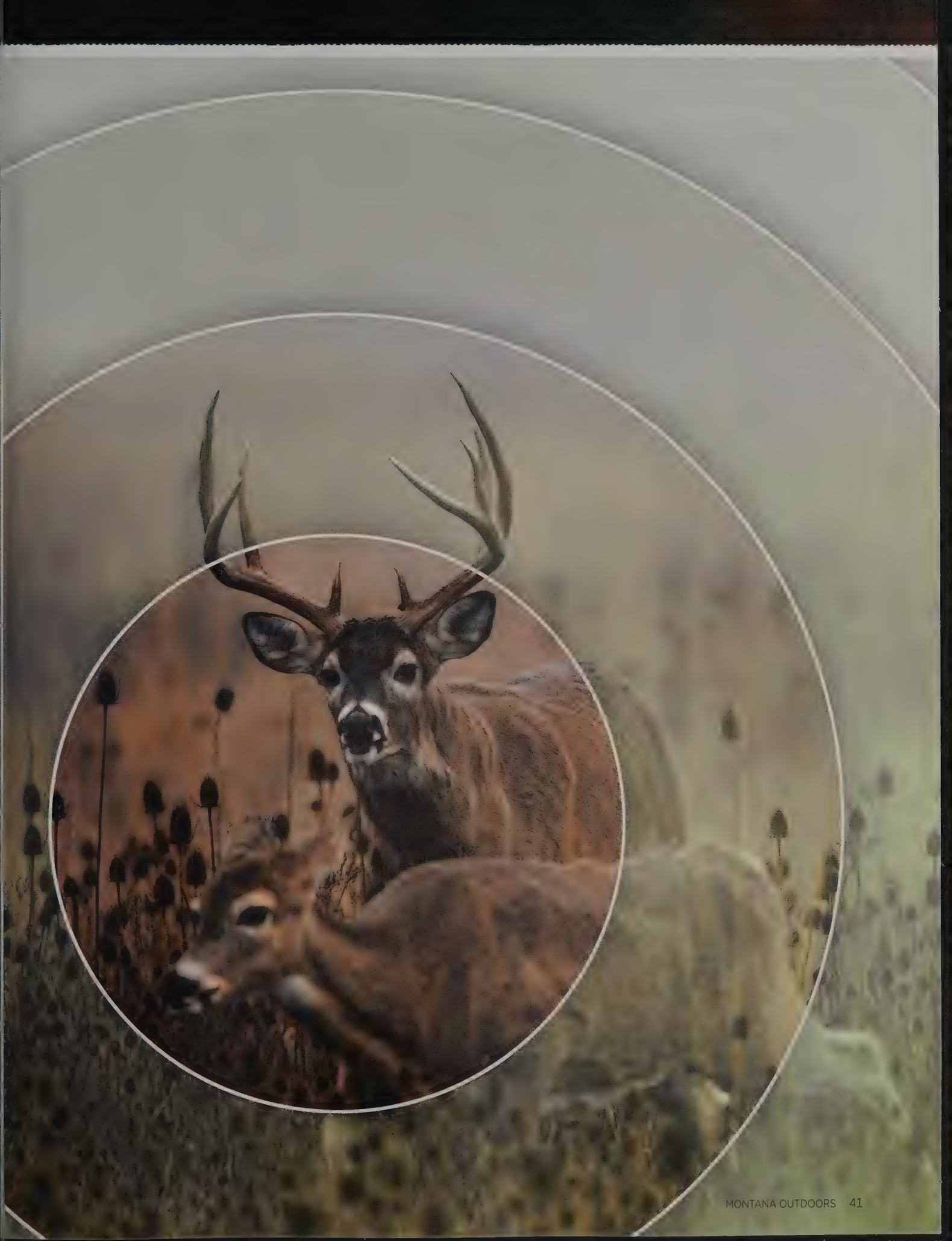
ZONE DEFENSE

One way Montana has responded to the “genie” is by establishing CWD Management Zones. In these areas where the disease has been detected, the department wants to contain it by boosting the harvest while also requiring hunters to take special precautions with harvested game. This “zone defense” approach, as the department calls it, prohibits hunters from removing whole carcasses, whole heads, brains, and spinal columns of deer, elk, and moose harvested within the zones. This will decrease the movement of infectious game animal parts to new areas.

Scientists believe CWD proteins (prions) likely spread between animals through body



STAYING IN THE ZONE Key to FWP’s aggressive response to CWD is preventing deer parts that could contain the disease from leaving special CWD Management Zones. This “zone defense” approach, as the department calls it, prohibits hunters from removing whole carcasses, whole heads, brains, and spinal columns of deer, elk, and moose harvested within the zones. Opposite page: Though mule deer are generally the focus of CWD management in Montana, recent discoveries of the disease in whitetails near Libby has broadened the focus.



fluids like saliva and urine, either by direct contact or via soil, food, or water. Hunters can spread CWD by transporting infected brains, lymph nodes, and spinal matter and then dumping the diseased tissue into new areas where deer, elk, or moose live.

The department's immediate goal is to enlist hunters' help to ensure that CWD doesn't slip through cracks in the zone defense and spread throughout the state. Emily AlMBERG, FWP's wildlife disease ecologist in Bozeman, says the long-term task is to understand how CWD will affect Montana's elk, moose, mule deer, and white-tailed deer populations. "It's such a slow-progressing disease, with the time from infection to death lasting two years or more, that it could take decades before we see population declines," she says.

Formerly the editor-in-chief of Outdoor Life and now a freelance writer, Andrew McKean lives in Glasgow.

Colorado and Wyoming, where the disease has infected deer and elk herds for decades, have reported annual mule deer population declines ranging from 20 to 45 percent in herds with high CWD prevalence. "Clearly, CWD poses a serious threat to our deer and elk herds. Even if declines in Montana are just half what they are seeing in other states, it's still worrying," says Vore. "Throw in a tough winter, severe drought, or heavy predation, and we could see drastic declines."

If there's any comfort in playing defense against chronic wasting disease, it's that FWP has plenty of teammates. CWD was identified as a fatal disease in 1967, but in the last two decades it has expanded to cover nearly half the country.

Each state wildlife agency has responded in its own way. Two decades ago, Wisconsin tried eradication, intending to kill every whitetail in the area where the disease first appeared. One reason the strategy failed was CWD's ability to survive without a host, lying

dormant in soil until a new generation of deer occupied the area and became infected.

Wyoming chose a more passive response and simply monitored the expansion of CWD in its deer population. That hasn't worked either; recent population declines threaten the existence of some deer herds.

Vore says FWP has learned from other states and is carrying out an approach tailored to Montana's unique culture and landscape. "This state has a history of providing abundant hunting opportunity, which tends to reduce the number and age of bucks in the population," says Vore. "We see that as a key tool to limit the spread of CWD. We want and need hunters as partners."

Happily, existing season structures require only minor tweaks to focus more hunting pressure on herds inside the CWD Management Zones. "With mule deer, bucks are two to three times more likely to be infected, and more likely to transmit that infection, because they're contacting so

"It's such a slow-progressing disease, with the time from infection to death lasting two years or more, that it could take decades before we see population declines."

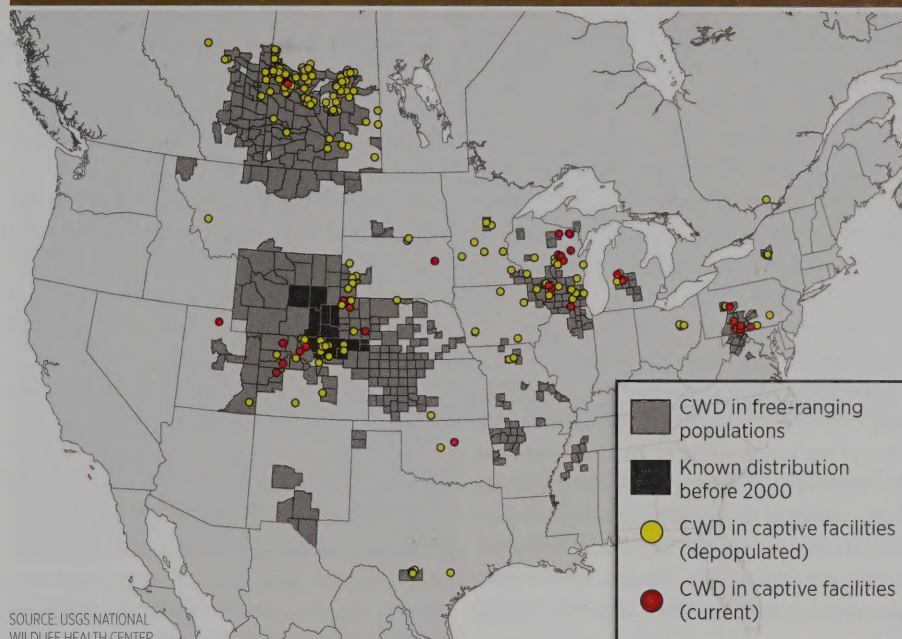
LOOKING FOR ANSWERS At the FWP pathology lab in Bozeman, disease ecologist Emily AlMBERG holds lymph nodes ready for testing at Colorado State University. FWP has submitted brain, spinal, and lymph tissue from hundreds of deer in an effort to learn where the disease exists in Montana and its prevalence in those areas.





WARNING SIGNS? A mule deer doe near Red Lodge exhibits possible CWD symptoms: emaciation, drooping ears, and a lack of fear.

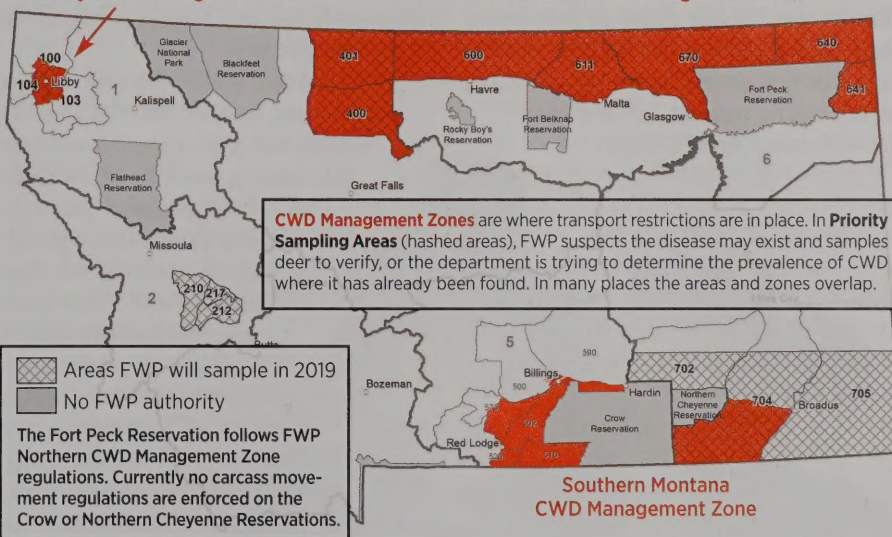
CHRONIC WASTING DISEASE IN NORTH AMERICA



CWD MANAGEMENT ZONES AND PRIORITY SAMPLING AREAS

Libby CWD Management Zone

Northern Montana CWD Management Zone



many does during the rut,” Vore says. “We’re promoting buck harvest in those zones, but we also want to reduce overall deer densities with higher doe harvest. There’s good evidence that the lower the population around infection sites, the better we can slow its spread to neighboring areas.”

It makes sense. The fewer deer on the landscape, the less chance an infected deer will come in contact with another.

The department wants to pare down populations during the regular five-week hunting season by liberally issuing B licenses and offering free CWD tests for deer taken inside Priority Sampling Areas (see map at right). FWP officials believe that the carcass-transport rules will prevent humans from transmitting the disease elsewhere.

EYES WIDE OPEN

In addition, this fall FWP will monitor deer herds along parts of the Wyoming border for infection. Crews will set up check stations in FWP’s Region 7 for testing hunter-harvested deer and elk to see if CWD has entered Montana’s southeasternmost corner.

“Ongoing surveillance is also a key part of Montana’s response to CWD,” says Vore. “Testing hunter-killed animals will show us where the disease is. Then we can focus additional hunting pressure to determine ‘prevalence’—the percentage of a population that’s infected.” With that knowledge, Vore adds, FWP can tailor its next steps, whether using hunters to reduce animal densities or taking a more aggressive containment approach.

So far, the main “vector” (an organism that carries and transmits an infectious disease) for CWD transmission in Montana appears to be mule deer, says Almborg, though the recent confirmation of CWD in

Libby-area whitetails means hot spots of infection among that species are possible, too. “Wherever we detect CWD, we end up closely monitoring mule deer, white-tailed deer, and elk,” she says.

Vore compares CWD to cancer. Like cancer, the disease spreads undetected for some time, but once it reaches a certain level, drastic actions are required to control it.

“We’re in the early years of this ‘cancer’ here in Montana,” he says. “We still have a

chance to slow its spread. I don’t think we’ll ever get rid of it, but we can manage it. The next few years will determine the pace and pattern of its pathology. Eventually, it may spread throughout the state, but I’m hoping we can control how quickly that happens.”

And if CWD spreads more widely? “With the help of hunters, I believe we can keep its prevalence within deer herds low enough to prevent major population declines,” Vore says. 🐾

Neighboring relations

BY TOM DICKSON

I'd hunted on private land (with permission) for years but never thought much about the people who owned the property. Then my cousin Bobby invited me to see what South Dakota's deer opener was like for him and my cousin Steve, his brother, who together owned about 15 sections of wheat fields and cattle range west of Pierre.

We didn't need an alarm clock that morning. Two rifle reports from the highway that bisects the ranch woke us before dawn. For the next several hours, Bobby and I drove from one field to the next, chasing off deer hunters, mostly locals who hadn't bothered to ask permission. "I'm a hunter myself and I like most hunters, but I hate this day," Bobby told me as we sat in his kitchen eating lunch.

I've since learned of the trespassing and other headaches that many Montana landowners endure each hunting season. Hunters not leaving gates as they found them—either open or closed. Litter in parking areas. Pickups and four-wheelers driving across clearly marked "walk-in-only" areas. Shot-up signs. Groups

of hunters knocking on the door before dawn on opening day.

In hunters' defense, some transgressions are unintentional, and those who intentionally break rules make up just a small proportion of participants. Most of us understand that access to private land is a privilege and act accordingly.

Still, poor behavior by even a few is a big issue for many landowners.

For FWP, too. Private land provides habitat for 70 percent of Montana's deer and pronghorn and one-third of its elk. Private property is also essential for providing people places to hunt. In addition to supplying recreational opportunities, public hunting on ranches and farms is the most effective way to control deer and elk numbers. Without public access to ranches and farms, big game numbers could explode, leading to extreme crop depredation and massive herd die-offs during severe winters.

To foster good relations among landowners, hunters, and FWP, agency wildlife biologists and game wardens help stockgrowers fence deer and elk out of pastures and haystacks. Biologists provide advice on applying for state and federal cost-share grants to improve wildlife habitat on private land.

Wardens respond to complaints of trespassing, shooting near buildings, or other illegal actions. The department controls weeds on state wildlife areas and allows adjacent ranchers to graze cattle on some WMAs where grassland habitat needs rejuvenation. FWP also helps landowners manage hunting on their land

through the Block Management Program.

To promote good hunter behavior, FWP reminds hunters in its regulation booklets, press releases, and public service announcements to always ask permission to enter private land and to act ethically once there. The agency also urges hunters to knock on doors and meet with landowners to develop healthy relationships—and to do it well before opening morning.

But there's only so much a government agency can do to counter societal changes and convince people to behave. Few hunters these days grew up on a ranch or farm, where they would gain a landowner's perspective. Many lack the time to find landowners—who often live out of state—and develop relationships. Then there's the growth of trophy hunting videos, TV shows, and social media, all fueling a big-antler obsession that makes even ordinarily ethical hunters sometimes act like knuckleheads.

FWP points out to hunters how they benefit from healthy landowner relations. For instance, 6 million acres of private land enrolled in Block Management are open to public hunting thanks to countless discussions at kitchen tables and cafes between landowners and FWP biologists and wardens.

The department also reminds hunters that unethical actions lead to locked gates. And that slob hunters create a public relations black eye that reduces public support for hunting.

Game wardens enforce hunting laws, but it's not their job to police hunting ethics. For the good of hunting, we hunters need to monitor our own ranks and call out bad behavior when we see it.

It's been years since I've talked with Bobby about deer hunting. I hope he no longer has reason to dread South Dakota's deer opener. I also hope that, here in Montana, work by FWP, hunters, and landowners to strengthen relationships is helping ranchers and farmers see the value of keeping their land open to public hunting, while also helping them make it through the hunting season with as few headaches as possible. 🐾



Tom Dickson is editor of Montana Outdoors.

American coot

Fulica americana

By Jim Pashby



SCIENTIFIC NAME

Fulica is Latin for "coot," and *americana* means "America."

RANGE AND HABITAT

The coot's breeding range extends from southern Quebec to the Pacific coast and as far south as Central America.

In Montana, the birds are found statewide in lakes, ponds, and deep wetlands ringed with cattails and bulrushes. In fall they migrate south to Texas, Louisiana, and other southern states.

REPRODUCTION

Coots mate during May and June. Once they bond, a mating pair selects a nesting territory, which the male aggressively defends from other males by striking out at intruders with his large feet.

Each season, coots build several nests, which are hidden among tall reeds, cattails, and bulrushes. The hen lays her eggs in one nest and uses the others as places for the young to rest when not swimming.

The hen lays an average of six eggs, which take 21 days to hatch.

When baby coots hatch, orange-tipped plumes known as "chick ornaments" cover the front half of their body. These colored feathers fade after about a week. Scientists suspect the coloration evolved as a way for chicks to stand out from each other as they compete for food from the parents.

DIET

Coots are omnivores. They eat the stems, leaves, and seeds of pondweeds, sedges,

grasses, and other vegetation, as well as algae. They also consume aquatic insects, tadpoles, fish, worms, snails, and crayfish, along with grasshoppers, ants, and beetles blown onto the water surface.

PREDATION

Coots fall prey to bald eagles, raccoons, and red foxes. Crows and magpies sometimes sneak in and snatch coot eggs, though coot parents defend the nest aggressively.

CONSERVATION

Coots are a migratory game bird protected by seasons and limits, but few are shot by hunters. The birds rarely fly to provide wing shooting, and the meat is described as "muddy" tasting, though it's used sometimes in gumbo, which can mask the taste of almost anything.

Coots are common and widespread, and populations appear stable, according to the North American Breeding Bird Survey. Despite the species' healthy status, a group calling itself Coots Unlimited was established in 1979 in the town of Ashby in western Minnesota. It turns out the 250-member club focuses not on coot conservation but general wildlife habitat restoration and youth hunting education projects, which it funds with an annual banquet.

And the name? "We wanted something original that no one else would have," says founding member Jim Rylander. 🦆

COOTS
UNLIMITED

IDENTIFICATION

Coots are often mistaken for small ducks; in profile they resemble American wigeons. But coots are actually more closely related to rails, a group of rarely seen birds found deep in marsh vegetation.

A coot is the size of a chicken, with a dark-gray to black body and wings. The short, thick bill is white, as is the frontal shield, which has a tiny red patch at the top. The birds make soft squeaks, cheerful chirps, and light trumpeting sounds.

BEHAVIOR

You rarely see coots on land or in flight. They spend nearly all their time in ponds and lakes, eating aquatic plants and insects. These gregarious birds swim in large groups known as "rafts," regularly diving for underwater vegetation using their large feet for propulsion. They don't fly if they can help it. To get airborne, coots require long, running takeoffs and a furious flapping of the wings. Their flight is labored and clumsy. It's hard to believe they can migrate hundreds of miles twice each year, but somehow they manage.

Jim Pashby is a writer in Helena.

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**The only office
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to work out of
is **no** office.**

My love for the outdoors led me to hunting, and that led me to wildlife biology. For FWP, I recommend harvest quotas, work with landowners on access, and help out hunters and others who need information on wildlife. I've seen the passion that people have for this place and my work. That passion and my outdoors "office" make this job pretty great. I'm Ashley Taylor. And the outside is in me.

ASHLEY TAYLOR ★ WILDLIFE BIOLOGIST ★ JUDITH GAP



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